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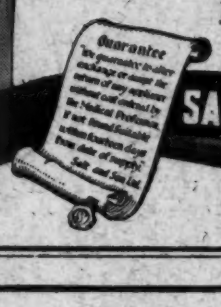

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY MARCH 4 1950

MEDICINE IN THE MODERN STATE*

BY

Sir HARRY PLATT, M.D., M.S., F.R.C.S., F.A.C.S.(Hon.)

Professor of Orthopaedic Surgery, University of Manchester; Vice-President of the Royal College of Surgeons of England; President of the Société Internationale de Chirurgie Orthopédique et de Traumatologie

I must express my appreciation of the very welcome invitation extended to me by the Irish Medical Students Association to take part in this meeting and to speak on a subject of general interest to all who have elected to follow the vocation of medicine. The title submitted to me—"Medicine in the Modern State"—which I fear I accepted somewhat impulsively, suggests a subject of widely ranging content. To do justice to its many facets would indeed demand the combined qualifications of scientific historian, medical prophet, and political philosopher. I cannot pretend to belong to any one of these three categories. But in common with others of my generation, long experience as a practising clinician and university teacher has perhaps fostered an attitude of mind which enables one to survey both the past and the contemporary scene with some degree of objectivity.

I propose, in the first place, to try to answer the broad question, "What general or special features of the modern State would appear likely in the very near future to exert an unwelcome influence on the traditional practice of the art and science of medicine?" I have previously examined the claims of the profession of medicine to continued recognition as an independent self-governing guild within the framework of any contemporary society (Platt, 1947). Our claim to such recognition is based on our age-long tradition as a profession which is at once liberal, scientific, and learned. Liberal, because we have inherited a corporate sense of values, a historical ethical code, and an attachment—not necessarily uncritical—to the empirical tradition with its tolerance of new ideas and its ultimate rejection of all dogmatic systems. Scientific, because medicine shares a common ancestry with the natural sciences and because the art of medicine turns continually to the scientific method for its subsistence. Learned, because for many generations men in our profession distinguished for their scholarship—admittedly few in number at any one period—have set the standards of the intellectual aims of the many.

As I have said elsewhere, medicine can now be regarded as a cultural discipline in its own right within the larger pattern of university education. In an age of precocious specialization we should be ever conscious of the danger that medical education may cease to be informed by its old humanistic tradition.

The Modern State

And now we come nearer to the heart of our problem. How far are the freedom and the independence accorded to us by society in the past, as one of the learned professions, compatible with the conscious or unconscious aims of that abstraction the modern State? What social or economic trends can be detected which might be regarded as inimical to our cherished traditions—traditions which have for nearly two thousand years inspired our efforts to serve our fellow men in our own chosen way, whether in the practice of our art or in the pursuit of knowledge? I must assume that for the purposes of this discussion when we speak of the modern State we are concerned only with that collection of nation States which belongs to the world of Western civilization—a civilization launched as a result of the blending of three great and fundamental influences—Greek thought, Roman law, and Christianity. From such foundations the political scientist can trace for us the evolution of the structure and functions of modern democratic societies through the successive epochs of mediaeval Christendom; the scientific revolution of the sixteenth and seventeenth centuries; the age of reason of the eighteenth century; the industrial revolution of the nineteenth century—and so on down to the age of social ferment and disillusionment in which we are now living. Throughout the whole of this long period the art and science of medicine, though responsive to the influence of the intellectual climate of each age in turn, can be seen to have pursued a comparatively independent course of development.

The political scientist can also retire to his ivory tower, and in contemplation of the whole concourse of sovereign States of the modern world can see the reflection of the oldest controversy in political philosophy, the conflict of the two great theories of the State—the State as an organism and the State as a machine—as a mere device of government. These analogies, so useful for the purpose of metaphysical speculation, at first sight would seem to have little to do with our amateur attempts to assess the meaning of the ideas and trends we perceive around us. As a learned profession, however, we cannot afford to ignore the wide generalizations of the political philosophers; for they give us a better understanding of the vagaries of the political climate in which we move and have our being, and, more specifically, they help us to recognize the significance of those ideas or so-called ideologies which even in a modern democratic State may on occasion persuade social or political groups to challenge the long-established independence of the free professions. I believe that there are good reasons for holding to the view that at the present time the two fundamental requirements of our own profession—intellectual freedom and a large measure of self-government—are not in serious jeopardy from any overt or purposive political challenge.

*An address given to the Irish Medical Students Association at a meeting held in University College, Dublin, on December 15, 1949.

Contemporary Social and Economic Trends

We can now leave the political philosophers to continue their meditations, and approach the modern State from the standpoint of the economists, who are responsible for the introduction of terms now widely quoted in popular literature, such as the "Welfare State" and the "Managerial Revolution"—terms used to describe new social patterns now taking shape in highly industrialized nations. It is in such emergent patterns that we can perceive trends which are not always the result of conscious political action but which might conceivably deflect the strategy of medicine in the future into channels not of our choosing. These trends constitute a challenge not to our privileged position but to our powers of adaptation, and they call forth the capacity for leadership which is one of the contributions of a learned profession to any society of which it is a part.

The Welfare State in essence is not a recent innovation. It may be regarded as the child of the increasing modicum of governmental paternalism with which we have been familiar for several generations. Every modern State in which the central government has assumed responsibility for any of the larger social services is in some sense a Welfare State. Once launched on its course the Welfare State acquires a natural impetus from within; it becomes the pride of the administrators, and it illustrates what Bertrand Russell (1949) has called the "administrative fallacy," in which the tidiness of a planned organism is regarded as a model of order—an end in itself.

Its later development is inevitably reinforced from without by the action of legislators of all shades of political opinion. This is true even of the United States of America, where the concept of the Welfare State is held in contempt by large masses of the population. It has been said that when the inhabitants of the United States of America wake up to find how far that nation of rugged individualists has gone in the direction of the Welfare State they will give it another name and claim to have invented it. The Welfare State in its modern conception is in large measure also the ultimate expression of a demand for complete social security by industrial populations who have experienced the miseries of prolonged large-scale unemployment. It also bears the mark of the great school of economic thought founded by Maynard Keynes.

In any complete pattern of social security based on a system of national insurance, medicine tends to fall into line as merely one of a number of social services. Its comparative value to the nation in relation to other competing instruments of security—competing, that is to say, for treasury budgets—is now assessed by politicians. From this it is but a step for the politician to assess the relative value of the individual doctor in terms of his remuneration. The relation of the profession to its so-called employers then becomes one of contract rather than status. Medicine thus tends to lose some of its traditional isolation. Furthermore, with the widespread popular use of the jargon of economics, curative medicine, whether practised by general practitioner or specialist, tends to be spoken of as a commodity—a form of consumer goods. Thus we read that certain members of executive councils, management committees, or governing bodies of hospitals are chosen to represent what is called the "consumer" interest. All this may be simply a matter of changing atmosphere; it may be distasteful to our sense of *amour propre*—but perhaps little more.

I do not think we can yet detect in the Welfare State any overt or positive challenge to the corporate independence of our profession; and in the long run it does not follow that, within such a framework of social security, medicine need lose any of its ancient prestige as a learned profession. But if we envisage a Welfare State which has attained to its complete logical pattern of development, and in which a comprehensive system of insurance has led to a complete and final abolition of private practice as we have known it, there is a real fear that something of the old individual professional freedom must inevitably be surrendered. If this were to happen it would be our task to re-create a new system of human relations with the "consumer" public by which the doctor continues to be respected, as of old, as a guide, philosopher, and friend in his community. We must in any case take notice of the pressure of economic events

In every nation to-day the cost of modern medical care has outstripped the capacity of the great majority of citizens to meet it from current earnings or savings no matter how high the average standard of living may be. For this large majority some form of prepaid medical service is essential. In many parts of the United States of America, where the group practice of medicine had already been established for some time, large voluntary insurance schemes have been launched to cover both general practitioner and specialist services. The American medical profession as a whole regards this system as likely to preserve the freedom of the individual doctor and has welcomed such developments in the hope of postponing *sine die* the introduction of any form of Federal health service. It remains to be seen whether under conditions of rising costs, particularly in hospital maintenance, such schemes can remain solvent without imposing on the middle classes, already "squeezed" by taxation and the high cost of living, a financial burden beyond their capacity to bear (Lewis and Maude, 1949).

In less wealthy nations it seems inevitable that the techniques of the modern Welfare State will be invoked to provide a health service, both preventive and curative, and that present economic trends will ultimately compel the vast majority of citizens to make use of it for their basic needs. But men and women have more than basic needs, and as a profession we should continue to urge that no obstacles should be deliberately or unintentionally erected which would prevent any citizen seeking satisfaction outside the framework of an administrative Utopia. The urge to preserve not merely the material rewards but the intangible values of the background of private practice side by side with a national service designed and developed under the guidance of the best brains of our profession is not an ignoble aim.

The New Industrial Revolution

We may now turn to a consideration of the possible impact on the future of medicine of another of the social and economic trends of the present day—the changing social pattern to which the label "Managerial Revolution" has become attached. It is claimed that in the most highly industrialized nation of the world, the United States of America, a new society is emerging in response to the extension of the mass-production principle. Peter Drucker, an American writer on economic subjects, whose book, *The End of Economic Man*, excited considerable interest on both sides of the Atlantic some years ago, has recently gone so far as to say that the mass-production principle is the basic world disturbance of our time to which communism and fascism and the new nationalisms are merely reactions (Drucker, 1949).

We thus appear to be passing into the era of a new industrial revolution. Drucker argues that mass production is not a new technology, but a principle of social order—a concept for organizing men for joint work; and, furthermore, that it is based on two factors: (1) specialization, the

unit of work being one operation or one motion and not the finished product of the old-time craftsman; and (2) integration, in which the pattern of the whole is seen in a preliminary theoretical study before masses of men are organized to carry out the essential processes. In the new industrial society Drucker sees the decline in numbers of the old working classes and the rise of two dominating classes—the executives (managers and union leaders) and a new middle class of technicians and technologists, many of whom will presumably be engaged in carrying out the single-motion repetitive processes and for whom full employment must be guaranteed by the industry and not by the State.

The effect of this new revolution on the worker is to tie him irrevocably to the plant, and thus to disrupt his family as a biological and social unit. Drucker hints at the application of the mass-production principle in medicine to large-scale research into such problems as cancer. We must assume that such a new industrial society must have at its back an agricultural society to feed it and a distributive society to keep its goods in circulation. We are not told how the principle of mass-production is to function if applied to these supporting groups. And how do the liberal professions, the artists and musicians, fit into this technological scene?

I must confess that the picture—admittedly oversimplified—of a mass-production-conditioned society is to me forbidding. It does not suggest "the good life" of a Western Europe with its historical background and diversity of cultures. It would seem destined to provide all the necessary aetiological factors for an increase in the incidence of the stress diseases, old and new, psychological and physical, at all levels of employment. The wisdom and philosophy of the older medicine will be sorely needed in such a society if the ills of a new industrial revolution are not to surpass those of the old. We should also view with concern the invasion of the field of medical research by the uncontrolled mass-production principle. We need the instruments and appliances of modern technology; we need generous endowments (this may no longer be possible if the wealthy philanthropists are liquidated by the rise of the new managerial salariat); and perhaps we can learn to use a limited man-power to better advantage. But the fundamental clinical and scientific inquiries of medicine are not likely to flourish in an environment of high pressure and stress. It might be supposed that this new pattern of society will emerge only in the United States. But a study of the industrial effects of the mass-production system has revealed the striking and disturbing fact that the per capita output of the average American worker is nearly twice that of his European counterpart. The impact of the new industrial revolution on European values must obviously be reckoned with, and new problems will be posed for our profession.

As one surveys the modern democratic State it would seem reasonable to conclude that, although the strategy of the practice of medicine must undoubtedly continue to reflect the new social, economic, and political conditions of our age, that sense of independence and freedom which both the doctor as an individual and the profession in its corporate form have come to regard as a natural right will long endure.

Medicine of the Future

We may now contemplate in retrospect a fifty-year period of notable progress. We are, however, reminded that thirty of those fifty years were occupied by two wars and the uneasy breathing-space between them—not two separate wars, perhaps, but, as General Smuts has told us, one World War, the Thirty Years War of our modern age. We note the quickened pace of discovery and the intensive and single-minded application of new and improved methods of therapy which are characteristic of all states of war. And we may chronicle with pride such achievements in peace as the control of diabetes and the grave anaemias; and, in war, the control of wound infection by penicillin, the control of malaria by new synthetic drugs, the effective treatment of shock and haemorrhage, and the prevention and treatment of the acute physical and mental stresses peculiar to training and battle.

All this new knowledge has already been incorporated in the techniques of contemporary practice. But we shall, I trust, continue to see these achievements in their true perspective. They provide no occasion for complacency. For we have to remember that the spectacular triumphs of the medicine and surgery of war have been mainly concerned with emergency situations—with acute disease and catastrophes—in which means of prevention or control could be envisaged and intensive and specific researches could be quickly launched. But in the tragic field of malignant disease, and in the wide range of the degenerative diseases of man—non-lethal affections for the most part except in the long-term view—and still more in the special problem of an ageing population, our knowledge is still scanty and unprecise, and our therapeutic triumphs in the past are far from reassuring. These long-term problems, which indeed are not lacking in urgency, constitute the outstanding and specific challenge to the medicine of the second half of the twentieth century. Our past experience should warn us not to look for rapid results in their solution. As in many of the comparable problems of science, our knowledge and understanding are likely to be illuminated by a patient study of fundamental processes and ideas.

Conclusion

With such a vista before us the liberal profession of medicine must surely continue to offer an attractive way of life. Much remains to be done, however, to make the working conditions worthy of highly educated men and women. General practice must be restored to its old importance, and the doctor must be relieved of many non-essential tasks which he is still called upon to perform. Some of us believe that this will come about from the establishment of group practice based on health centres where a wide range of ancillary services—secretarial, nursing, and so on—is available, and the control of beds in general practitioner hospitals both in the country and in the towns. In the fields of specialist practice based on a hospital service our main requirements are generous budgets for research and travel, for the proper distribution of specialists, for the adaptation of old hospitals and the building of new ones, and, above all, to meet the high maintenance costs which modern advances in the art of medicine and surgery have imposed upon us. If our profession fails to meet the social and scientific challenge of the modern age the "fault, dear Brutus," will lie "not in our stars, but in ourselves."

It might be suggested that the social and economic trends to which I have referred are remote from this green and sheltered isle. But I would remind you who represent the coming generation that for many years some of the best products of the Irish medical schools have been labelled "for export only."

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DEVICES FOR THE PROTECTION OF THE WORKER AGAINST INJURY AND DISEASE*

BY

DONALD HUNTER, M.D., F.R.C.P.

Physician to the London Hospital

PART II

In this second part of the lecture I shall endeavour to outline something of the part played by research in the protection of the worker against injury and disease. The work of physicists, engineers, agriculturalists, chemists, and toxicologists will be discussed. It is to be noted that such research is still necessary: it has never been pursued with greater devotion than at the present time.

7. Protection Against X Rays and Radioactive Substances

In protecting the worker against the effects of *x* rays and radioactive substances, including the effects of nuclear fission, the industrial doctor must collaborate closely with the physicist. In 1896, within the first few months of their discovery, it was found that *x* rays were stopped more effectively by lead than by any other common metal. Hence lead for protection came into early use. About 1903 there appeared a multitude of protective devices to be worn by the radiologist, including apron, jacket, gloves, and goggles. This type of protection gradually reached its peak about 1914, when the more elaborate devices gave place to means of protection which were built into the apparatus. The protective materials used include lead, lead glass, lead rubber, and lead plastics.

When installing an industrial *x*-ray set advice must be taken on the thicknesses of lead, barium concrete, or brick necessary to protect the worker. Where, for example, a one-million-volt set is used to detect flaws in the welds of boilers, several inches of lead may be used to secure adequate protection. When such *x*-ray work is done it is important that no person should remain in an area which has not been declared safe by an expert physicist. The radiation received by a worker can be assessed by means of the blackening of a small wrapped photographic film worn on the coat lapel during working hours for a week. The maximum permissible dose of *x* rays in any one working week is of the order of 0.5 r. From 1943 to 1948 the National Physical Laboratory carried out film tests on several thousand radiological workers, and the results indicate that about 80% receive less than 0.1 r per week from external sources of radiation (Binks, 1949). Repeated periodical blood counts must be carried out on all doctors, nurses, research workers, students, technicians, and workshop employees exposed to *x* rays.

Though medical practice is now almost safe so far as *x*-irradiation is concerned, matters are very different in the case of radium. The penetrating power of the gamma rays is so great that surgeons who handle radium closely in their work can be but ill protected. In the case of people who carry radium about, the weight of lead they can carry only partly protects them. In the luminizing industry luminous paint containing 70 μg. of radium salts per gramme is applied to aeroplane or watch dials, compasses, gun-sights, and electrical instruments.

The potential hazards in this occupation are irradiation by alpha particles and beta and gamma rays, inhalation of emanations of radon from the luminous compound, and inhalation or ingestion of radioactive dust. A glass screen placed between the luminizer and the work protects the operative from external irradiation and the risk of inhalation is reduced to a minimum by adequate exhaust ventilation. The worker wears a rubber apron and a protective gown. The use of brushes to apply the luminous paint is prohibited and pens or solid applicators are employed. Frequent washing of the hands is necessary to remove contaminating powder. Inhalation of radioactive dust is controlled so far as is possible by daily washing of walls and benches, but ultra-violet illumination often reveals fine particles of luminous dust which come from small splashes of paint on the benches. Workers must wear beta- and gamma-ray sensitive photographic films, and tests of the expired air for radon must be repeatedly made. Routine clinical examination of luminizers is made especially to look for dermatitis, and repeated periodical blood counts are carried out.

The use of chain-reacting piles has produced risks of injury infinitely greater than those already experienced in minor degree in the radium industry, in *x*-ray work, and in research laboratories working with equipment such as cyclotrons and betatrons. The energy released from nuclear fission may irradiate the body with beta rays, gamma rays, or neutrons. There is also the risk of inhalation or ingestion of radioactive dusts and fission products.

Protection must be provided for the workers in factories and laboratories, and for the community near by. Dry waste is usually disposed of by deep burial underground. Liquid waste in small quantities may be disposed of by burial also, but larger quantities must be diluted or decontaminated enough to allow discharge into near-by streams in a concentration which will not be harmful. The inspection and supervision of workers is best accomplished by a special health-physics team, which might employ 70 inspectors to deal with 1,500 workers.

To detect the amount of radiation received workers must wear, either in the pocket or on the clothing, beta- and gamma-ray sensitive photographic films, the so-called personnel-monitoring meters. Mobile instruments are used to test radiation from sources or contamination of various sites and objects such as floors, walls, and desks (Fig. 7). Stationary instruments such as integrons and monitrons are used to measure and record general background radiation levels. They may be connected to an alarm system to sound a warning when a given radia-

FIG. 7.—Technician wearing protective clothing and using a portable Geiger counter. (By kind permission of Monsanto Chemical Co.)

*Conclusion of the Ernestine Henry Lecture delivered before the Royal College of Physicians of London on November 15, 1949. Part I appeared in last week's issue.

tion level has been reached. Barriers are always necessary, and in large installations like piles they may be massive concrete walls three to eight feet (0.9–2.5 m.) thick. Distance is the best barrier, but it is often necessary to use concrete and lead for walls and doors, movable blocks and bricks to protect against beta and gamma rays, and water or paraffin to stop neutrons. Rope barriers and warning notices may be used in danger areas. Ventilation is important to prevent air-borne contamination becoming lethal. Protective clothing is valuable, and facilities for laundering must be provided. Special soaps and chemical substances are required to remove plutonium.

Despite all these safeguards some persons will be exposed to dangerous amounts of radiation. It must be remembered that the highly trained scientist is likely to take the most foolish chances and may be the hardest person to control. Routine tests of the worker's blood, sputum, expired air, urine, and stools for alpha, beta, and gamma emitters should be carried out. If these are found the worker should be removed from the risk of further absorption. A person exposed to neutrons may have induced radioactive elements in his body, when active sodium and potassium are readily detectable in the urine (Morgan, 1948).

8. Researches by Chemists

In all history there is to be found no finer contribution to industrial welfare than the invention of the miner's safety-lamp by Sir Humphry Davy. This was based upon scientific researches described by him to the Royal Society between 1815 and 1817. The investigations were undertaken at the request of a Society for Preventing Accidents in Mines formed in 1813 in consequence of the increase of colliery explosions as pits of greater depth were worked. As the result of experiments Davy found that if a piece of metal gauze is interposed between a flame and an explosive gaseous mixture the heat of the flame is absorbed and conducted away by the metal gauze so that the gaseous mixture does not explode. His lamps were brought into use in the mines in 1816. For this signal service to industry Davy received a baronetcy in 1818. Not only was he the greatest chemist of many generations but he was also the finest of men, for he declined the fortune he could have made by taking out a patent on his invention. A modification of the Davy lamp called the flame safety-lamp is in daily use in coal-mines where there is the hazard of fire-damp or black-damp.

In testing for the presence of inflammable gas the miner on duty as safety man holds the lamp as near as possible to the roof of the mine working, because methane is lighter than air. He lowers the flame of the lamp until the yellow part hardly shows. The presence of methane will be discernible as a blue cap to the flame. Since the size of the cap and the amount of methane present in the air have been correlated, it is possible to estimate the percentage of fire-damp in the air current of the mine. Should it reach the explosive level the safety man sounds the alarm.

In 1899 John Haldane investigated the black-damp in various coal-mines, metalliferous mines, and wells, and found it to consist of nitrogen mixed with small amounts of carbon dioxide varying from 5 to 15%. Black-damp causes death from simple asphyxia through deprivation of oxygen. It is exceedingly dangerous, because the victim suffers hardly any warning symptoms before life is imperilled. Were it not that the safety-lamp is usually carried in such air, and that the extinction of its flame gives ample warning, since it occurs at about 17% of oxygen, accidents would be much more frequent.

One hundred and thirty years have passed since Humphry Davy worked on the safety-lamp, and we find chemists busier than ever. The present rate of industrial development has intensified the search for new materials. The substances produced rapidly become indispensable, but their properties may remain for a long time insufficiently understood. Many of them are harmless, but others are so deadly that their use might with advantage be forbidden. The success of such prohibition depends on the discovery of innocuous substitutes. In Great Britain the use as a rubber solvent of benzene, which evaporates slowly into the general atmosphere of a workshop, has been given up for nearly 40 years. In spite of the many safe and efficient substitutes for benzene this deadly hazard is still widespread in some countries—for example, Czechoslovakia (Rejsková, 1948). In 1940 English doctors advocated the prohibition of the manufacture and use of methyl mercury compounds as seed fungicides, yet further unnecessary deaths from this hazard have since occurred in Sweden (Ahlmark, 1948). Phenyl and tolyl mercury compounds are efficient substitutes and are harmless when handled with reasonable precautions. Experience in California has shown that organic phosphorus compounds for use as insecticides are too deadly for safe handling in factory, greenhouse, orchard, and market garden. Would it not be wiser to go on using nicotine ?

The mystery of the toxic effects of beryllium compounds is only partly solved. Berylliosis is a delayed granulomatous lung disease arising from the inhalation of beryllium compounds. It may be caused by handling zinc manganese beryllium silicate used as a phosphor in the manufacture of fluorescent strip lamps. Owing to its deadly effects its use for this purpose has been abandoned and other materials substituted. Simpler beryllium compounds have produced berylliosis in unusual circumstances.

The United States Atomic Energy Commission has investigated the contamination of the atmosphere in the neighbourhood of a plant producing beryllium oxide, beryllium copper, and beryllium metal. During the previous ten years 1,600 workers had been employed. Compared with five known cases of the chronic disease within the factory, ten cases with at least one death occurred in persons living within three-quarters of a mile of the plant, though they had never worked there. The atmospheric concentration of beryllium three-quarters of a mile away from the factory ranged from 0.01 to 0.1 μg. per cubic metre (Eisenbud *et al.*, 1949). The challenge of a poison deadly in such minute amounts is therefore made not only to the guardians of health within the factory but also to public health authorities in industrial communities in general. Indirectly, therefore, the splitting of the atom has given us new and grave responsibilities besides those connected with radioactive substances.

The work of chemists leading up to the discovery of safe substitutes for harmful materials used in industrial occupations dates back more than a hundred years. Mercury poisoning was common in the mirror-making industry until silvering was introduced. In 1835, working on the oxidation of alcohols, Justus von Liebig isolated acetaldehyde. Seeking a test for aldehydes, he observed that a test-tube becomes coated with silver if an ammoniacal solution of silver nitrate is warmed with an aldehyde. The mirror so formed provided a more perfect reflecting surface than an ordinary mercury mirror, and mercury poisoning disappeared in the trade. The invention of gold electroplating by Wright and Elkington in 1840 also led to a great reduction of mercury poisoning, because this process replaced that of fire-gilding, in which mercury was

volatilized from an amalgam by heat over a fire. In 1898 Sévène and Cahen substituted the harmless phosphorus sesquisulphide for yellow phosphorus in the manufacture of matches. This abolished phosphorus poisoning in the match industry and made possible the international prohibition of the manufacture and import of yellow phosphorus matches effected by the Berne Convention of 1906.

An outstanding contribution to the reduction of the risk of lead poisoning was the invention of the wet-pulping method in the manufacture of white lead. The house painter is protected against the dust of lead paint, at one time raised by the dry rubbing-down of lead-painted surfaces, because he now uses waterproofed sandpaper which enables him to keep the job wet. Chemists have produced a low-solubility glaze which protects the potter from the dust of white lead; similarly, paint technologists have protected the painter of metals by the invention of non-setting red lead. The use of litharge rubber—that is, rubber in which litharge has been incorporated in a mother batch to the extent of 90%—has abolished the production of lead dust in certain processes in the rubber industry. Substitutes must be found for toxic solvents. Work on refrigerants has produced the harmless dichlorofluoromethane in place of methyl chloride.

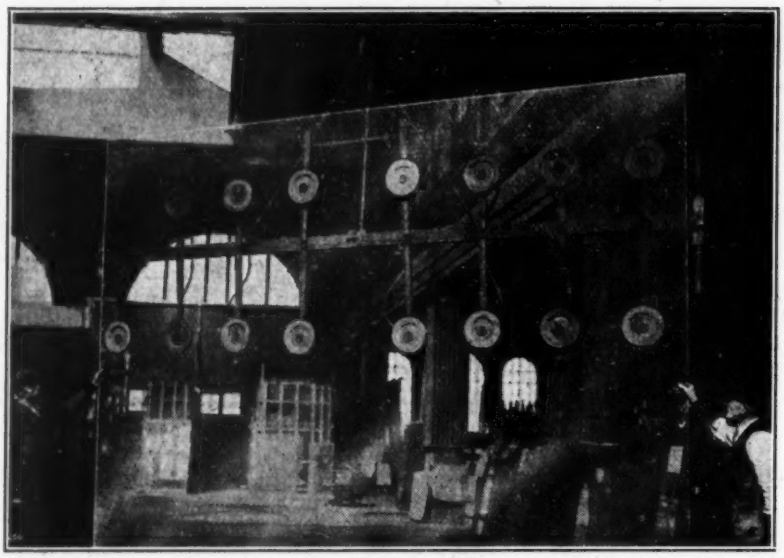

FIG. 8.—Large sheet of plate-glass lifted by sucker crane. (By kind permission of Pilkington Bros., Ltd.)

Prevention of silicosis in the potteries and the grinding trades has been greatly assisted by two discoveries. The first is the successful adoption of alumina in place of powdered flint for firing chinaware in the potteries. The second is the discovery by Edward G. Acheson, of Monongahela, Pennsylvania, in 1891, of the first synthetic abrasive, silicon carbide. Seeking to synthesize diamond, he was heating clay and coke in an electric arc. He obtained a product as hard as the natural abrasive corundum, and wrongly thought that what he had produced was a compound of carbon with corundum, hence "carborundum," a misnomer adopted as a trade name for silicon carbide. It has a hardness of 13, compared with 15 for diamond and 10.5 for sandstone. It has therefore largely replaced sandstone and other natural silica rocks in the grinding trades. Neither clinically nor experimentally has it been shown to cause lung disease. Where sandstone wheels are still used the operations of rodding and hacking as well as the actual grinding of metals must be carried out under a continuous stream of water which is drawn away from a trough at the base of the rotating grindstone.

9. Improvements by Engineers

Engineering devices have contributed alike to the prevention of accidents and to the diminished risk of absorption of toxic substances. Whenever possible mechanical means should be substituted for hand carriage; examples of this are seen in the use of cranes, rails, hoists, and travelling belts. In the manufacture of window-glass and plate-glass it is necessary to protect the wrists and ankles against injury. However, the wearing of canvas and leather wristlets and anklets does not entirely prevent cut tendons. Engineers have given their help by devising suction apparatus enabling a crane to pick up huge sheets of glass without manual assistance (Fig. 8). Exposure of the worker to toxic substances can be reduced by the use of covered conveyers and hoppers and automatic closed-in packing machinery. In collaboration with physiologists engineers have done extensive work on caissons, air locks, diving suits, and air chambers to prevent decompression sickness. Glass-workers' cataract has been minimized by the invention of a glass-bottle-making machine producing bottles at the rate of 40 a minute and at one-ninth the original labour cost.

In the prevention of silicosis engineers have made important contributions. The use of steel rollers for milling corn has removed the need for fashioning millstones from natural silica rock. Where castings and other metal objects are cleaned by sand-blasting the man wears special clothing so arranged that he breathes pure air from outside the sand-blasting cabinet. It is better to use steel-shot blasting in which crushed ball-bearings replace sand. The steel powder resulting is harmless. The hydro-blast is both the most modern and the safest apparatus used to clean castings. A high-velocity jet of sand and water is projected on to the castings, thereby removing moulding material, cores, and scale. The velocity of the water as it leaves the hydro-blast gun is in excess of three miles per minute. It can be readily understood that this apparatus has greatly improved the cleaning of castings and much reduced the dust in the atmosphere of fettling shops where it has been installed.

In hard-rock mining wet drilling is now widely used. John G. Leyner, of Denver, Colorado, has been called the outstanding mechanical genius of rock drilling. In 1897 he brought to practical success the principle of the pneumatic hammer drill. A blast of air was blown through a hollow drill-steel to remove rock cuttings from the hole. This produced so much dust that the drill became known as the "widow maker" and miners refused to use it. In 1898 Leyner obtained a patent on the commingling of air and water in the drill-steel. This is the principle of the axial water feed and is the basis of all wet rock drilling to-day (Holman, 1947). Where wet drilling proves impossible or objectionable, foam-drilling equipment can be used. By means of compressed air a viscous foam is forced through the drill-steel from a closed vessel. The foam traps the dust completely and the amount of water used is only about one gallon per hour. Near the rock face after shot-firing a mist projector is used to allay dust. It is really an atomizer using compressed air and spraying a mixture

of castor oil and water in which the proportion of oil to water is about 1 in 100.

In coal-mining the methods are not the same as for hard-rock mining. Coal cutting must be done in a wet state, and this is achieved by directing two jets of water on to the saw picks of the endless chain of the coal cutter at the points where they enter and leave the coal face. The quantity of water so used varies from one to five gallons per yard of cut, the result being that little dust is raised when the coal is subsequently worked. Water infusion of the coal face is practised through bore-holes, the water being forced in under pressure so that it spreads through the cleavage planes in the coal and wets the loose dust which is always present in the joints and seams. Hand spraying by water jets is used for wetting down the face and the pile of coal both before and during work (Hay, 1949).

FIG. 9.—Paprika splitter in Szeged, the centre of the Hungarian red pepper industry. (By kind permission of Professor G. Gortvay, Budapest.)

10. Agricultural Researches

The Hungarian red pepper industry affords an interesting and unique example of the application of research in agriculture to the protection of the worker. In the sixteenth century, Turkish invaders of Hungary introduced the paprika plant, which they grew for medicinal purposes. In modern times the species *Capsicum annuum longum* has been cultivated in the region of Szeged, and this town is the centre of the Hungarian red pepper industry. The fruit of the plant when dry is deep red and is four inches (10 cm.) long, one inch (2.5 cm.) broad at the stalk, and tapers to a point. Women called splitters cut open the fruit with a knife and strip out a series of thin pale ribs which line it longitudinally. The ribs are discarded before grinding, because they contain too much of the pungent principle capsaicin. Fruits picked late in the season are often infested with the mould *Mucor stolonifer*, the colonies of which are removed along with the ribs by the women splitters (Fig. 9). The air of the workroom is then clouded by spores and mycelia, which settle everywhere as a fine dust.

A proportion of the splitters, especially those who have been many years at the job, suffer from loss of weight, poor appetite, poor sleep, and even haemoptysis. There is slight fever, and signs of bronchitis develop. In its chronic form the disease presents with cough, fetid expectoration, apical dullness, and cavities, as shown in bronchograms. Necropsy shows extensive fibrosis with bronchiectasis, and right heart failure. The disease is presumed to be due to the fungus, although the presence of its spores in the sputum does not prove it is more than a saprophyte.

Although generations of women had followed this occupation, using the same method for eighty years, neither employers, workers, nor doctors became aware of its existence until 1931. Workers grinding the split fruit and those handling the finished pepper do not suffer. It was at first sought to prevent the disease by the use of cotton-wool respirators, but these had little success. Ultimately the chief botanist of the Paprika Research Institute in Szeged succeeded in cultivating a variety of the plant in which the fruit had ribs containing much less capsaicin. Since it is possible to obtain first-class red pepper by grinding this fruit whole there is now no risk to the worker of inhaling the fungus spores, for indeed the paprika splitter is no longer needed (von Kováts, 1937).

11. Researches Still Necessary

It would be idle to suppose that our knowledge of occupational diseases is a finished chapter. Of the many problems awaiting detailed investigation two only will be mentioned here, both of them toxicological. Dinitro-*ortho*-cresol (DNOC) and diethyl-*para*-nitrophenylthiophosphate (parathion) are both used as sprays for crop protection. They are deadly in their effects upon man, and strict precautions are necessary to prevent harm to those who handle them in factories, greenhouses, orchards, and fields.

Dinitro-ortho-cresol

3 : 5-dinitro-*ortho*-cresol DNOC is a yellow crystalline solid first used as a weed killer, insecticide, ovicide, and fungicide in 1892, and is now manufactured on a large scale. In 1933 both dinitrophenol (DNP) and DNOC came into use in the treatment of obesity. Both substances act by stimulating the general metabolism, the effect being peripheral and independent of thyroxine. By 1937 many cases of poisoning and some deaths had been reported from all countries where this treatment of obesity was practised. Overdosage of DNOC caused at least three deaths in Great Britain at this time. Many people developed cataract causing total blindness in both eyes some months after completing treatment with these substances. Although less than 1% of those treated suffered from this complication it is a serious objection to the use of these compounds, since it is impossible to predict which individuals are particularly susceptible to the toxic effects. The use of both substances in the treatment of obesity consequently fell into disrepute.

Toxic symptoms and deaths occurred in persons manufacturing DNP during the first world war, and the same effects have occurred in the manufacture and use of DNOC since 1940. At least five deaths from DNOC poisoning have occurred in Great Britain alone. Four of these were in men spraying cereal crops. Deaths and cases of severe intoxication in industrial and agricultural workers have been reported from Germany, Hungary, France, the

United States of America, India, and Africa. A man aged 29 had been employed as an agricultural sprayer for one year. At the end of a day's spraying with DNOC during a hot summer he complained of feeling unwell. He went to bed and within a few hours was found to be very ill indeed. He was taken to hospital in coma and died there within half an hour. This is the typical story of the acute lethal effect of DNOC.

Early symptoms are excessive sweating, thirst, and loss of weight. Most spray operators lose weight during the DNOC spraying season though they may notice no other effects. The weight loss is more than can be explained by conditions of weather or long hours of work. There is good evidence that DNOC is a cumulative poison. After a single dose of 45 mg. by mouth, which is about half the daily dose recommended for slimming, DNOC can be readily detected in the blood four days later. Repeated doses of 75 mg. daily produce a rising blood level during dosage, and DNOC is still present in the blood in appreciable amounts two weeks after the last dose is given (Bidstrup, 1949). The relationship between toxic symptoms and concentration of DNOC in the blood is being studied. In cases of poisoning loss of weight occurs rapidly. One man who had to give up work on two occasions during the hot summer of 1947 lost 2 stone (12.7 kg.) in weight in one week. Shortness of breath, weakness, anxiety, and sleeplessness develop later. In fatal cases rapid noisy breathing, cyanosis, and a marked rise in temperature are striking features.

DNOC is absorbed through the skin by ingestion or by inhalation of dust, spray, or vapour. There is good evidence that breathing in fine dust readily produces symptoms. Nine men in a group of 21 sprayers who had used DNOC for from one to eight seasons had had symptoms of poisoning at some time. These occurred always in hot weather, when fumes from the mixing-drum and spray-tank are noticeable and the spray dries as a fine dust. Fatal cases in industry have occurred invariably during hot weather. The manufacture and use of DNOC dust appears to be particularly dangerous. Thus during the summer of 1943 fourteen cases occurred in a factory in Great Britain where a dust containing DNOC was being prepared for use against locusts.

One was that of a man aged 37 who had been employed for 17 days pouring DNOC powder from kegs into a grinding-mill. He wore a mask, but stated that it did not fit well and he inhaled fumes which arose from the mill. In one day his hands were stained yellow and in three days his feet, ankles, and knees were yellow too. He was well until two days before admission to hospital. His first symptom was sweating at night. Next day he felt suffocated, became dyspnoeic and weak, and believed that his mouth was full of dust. The most striking feature was the profuse sweating. On examination the temperature was 100° F. (37.8° C.), the pulse rate 130, and the respiratory rate 38 a minute, but no other abnormal physical signs were discovered. There was no tremor or exophthalmos. The basal metabolic rate, determined 24 hours later, was +80%. He recovered completely within 48 hours.

After the introduction of locally applied exhaust ventilation and periodic medical examination of workers in the factory concerned only one further case of mild severity was reported.

FIG. 10.—Driver in a gas-proof air-conditioned tractor cab spraying a wheat field with DNOC. (By kind permission of Pest Control, Ltd.)

In agricultural work spray operators must be warned that they are handling a dangerous substance. Individual workers have different methods of handling DNOC both in mixing the spray and in correcting faults such as blockage of nozzles on the spray boom. Concentrations of DNOC in the blood of men doing similar jobs in identical climatic conditions vary greatly. Modifications of standard spraying equipment result in different degrees of risk. Spraying-machines working on an atomizer principle seem to be particularly dangerous, since they produce a fine spray which drifts easily and settles as a dust which flies readily. There is often no agitator in the spray tank to keep the DNOC in suspension, and the nozzles of the spray boom often become clogged.

A spray operator on such a machine was observed during most of one day to correct this fault by jumping from the moving machine, running into the spray, and hitting blocked nozzles with a spanner while the machine and spraying continued. This is specifically forbidden by his employers, but adequate supervision of individual workmen in this type of work is difficult to arrange. In one fatal case it was discovered that the man had quenched his thirst with water contaminated with DNOC.

Mixing and spraying should be done across wind so that spray and fume are carried away from the operator. Protective clothing must include gloves, rubber boots, and overalls, which should be changed frequently. It is the duty of the employer to ensure that the men make use of such protective measures. Gas-proof air-conditioned

tractor cabs for the protection of men engaged in spraying operations are in use by one firm of contract sprayers (Fig. 10). Routine medical examination of all DNOC workers should be made at weekly intervals. Men showing the early toxic symptoms—namely, excessive thirst, sweating, and loss of weight—should be suspended from work, since there is no way of telling in which individual severe intoxication and even death may result. No case of cataract in industrial or agricultural workers has yet been reported, but this potential hazard exists and must add force to the drive to find a substitute for DNOC which is not toxic to man.

Parathion

Modern methods for the control of insect pests such as aphis and red spider include the use of insecticides in which the active substances are organic compounds of phosphorus. Preparations in common use contain tetraethyl-pyrophosphate (TEPP), hexaethyltetra-phosphate (HETP) and diethyl-*para*-nitrophenylthiophosphate ("parathion," E.605.f., DPTF, or "bladan"). These compounds were first discovered in Germany in 1939. They are alkyl-polyphosphates related in chemical structure and physiological action to di-*isopropyl*-fluorophosphate (DFP), which is a powerful cholinesterase inhibitor used in the treatment of myasthenia gravis, paralytic ileus, and glaucoma.

The insecticidal properties of TEPP, HETP, and parathion are similar to those of nicotine. The effects of HETP are almost certainly due to contamination by TEPP of the manufactured product. Early in 1945 a pilot plant for the production of organic phosphorus insecticides was built in Leverkusen, since nicotine had become difficult to obtain by that time. Soon after the end of the second world war the manufacture of these insecticides was started in the United States of America and in Great Britain. Preparations include liquid sprays, dusts containing 1% of parathion, and wettable powders containing up to 25% of parathion. These powders are diluted before being sprayed in greenhouses, orchards, and fields.

Insecticides containing organic compounds of phosphorus are poisonous to man and animals. They are from three to five times as toxic as nicotine. All types of preparation penetrate rapidly through the skin, producing only slight irritation at the site of absorption. Exposure to as little as 0.3 g. daily has been estimated as dangerous to man. Absorption may also occur from inhalation and ingestion. The commonest early symptom of poisoning is giddiness. This may be accompanied by pin-point constriction of the pupils and by headache. The symptoms are aggravated by smoking or by taking food. From two to eight hours later nausea, abdominal cramps, vomiting, diarrhoea, muscular twitching, coma, convulsions, and signs of pulmonary oedema may develop. Incontinence of urine and faeces is common. Death may result in as short a time as one hour after the onset of symptoms. Atropine is an antidote to this form of poisoning. It should be given in doses of 1 to 2 mg. (1/60 to 1/30 gr.) at hourly intervals until the pupils are dilated. Oxygen, under slight pressure to overcome bronchial spasm, should be administered at the first sign of pulmonary oedema. The fibrillary twitching of muscles appears to affect particularly the diaphragm, and artificial respiration may be necessary. A case of poisoning with parathion is reported from Denmark (Andersen and Jersild, 1949) in which symptomatic treatment by artificial respiration saved the life of a gardener. Since the man was too ill on admission to hospital to give a complete history, the cause of his illness was not known until after he had recovered, and no atropine was given.

HETP and TEPP hydrolyse rapidly in the presence of water or alkaline solutions. Danger of poisoning from these two substances is most likely to occur when the concentrated materials are handled in manufacture or in mixing with suitable wetting agents. Parathion is more stable, and cases of poisoning have occurred recently in the United States of America. In California symptoms developed in 46 members of a group of 90 men employed picking pears from trees which had been sprayed with parathion ten days previously. All these men recovered completely, but 16 of them were seriously ill and required treatment in hospital.

A senior laboratory technician of the University of California Citrus Experimental Station died after spraying an orchard with parathion for approximately six hours. He was aware of the risks and had had considerable experience in handling both concentrated and dilute preparations of parathion. The protective clothing which he wore included overalls, cap, boots, and gloves. He had not been exposed to parathion or any similar insecticides for three days before the accident. The symptoms were headache, giddiness, nausea, and vomiting. He was given a bath and treated with oxygen, but no atropine was used. Death occurred five hours after the onset of headache. Detailed inquiry failed to show that he was careless in handling the material on this occasion, and since he had been exposed to greater concentrations of parathion for longer periods in the past it is unlikely that he was hypersensitive to organic phosphorus compounds. Three deaths have occurred in men handling concentrated parathion in manufacture and compounding. A girl repacked damaged bags of 15% wettable powder for several hours and later developed symptoms and signs of parathion poisoning from which she almost died. She wore a respirator at her work, but there was no exhaust ventilation.

Strict precautions are necessary to protect workers engaged in handling the new insecticides. These are more easily arranged and applied in factories than in field operations. In factories where parathion is made, mixed with wetting agents, or incorporated in dusts or wettable

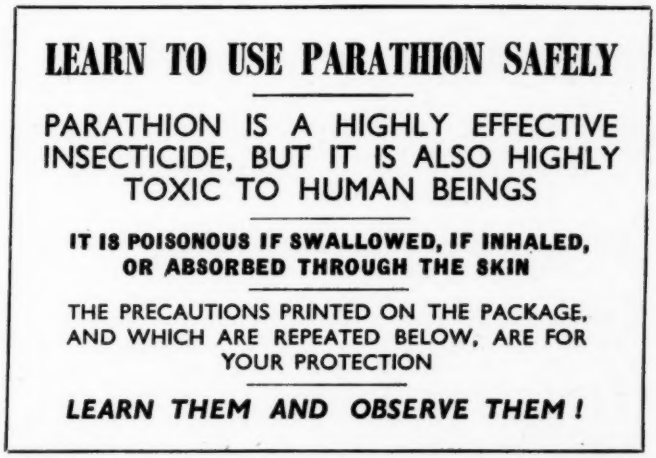
LEARN TO USE PARATHION SAFELY
PARATHION IS A HIGHLY EFFECTIVE INSECTICIDE, BUT IT IS ALSO HIGHLY TOXIC TO HUMAN BEINGS
IT IS POISONOUS IF SWALLOWED, IF INHALED, OR ABSORBED THROUGH THE SKIN
THE PRECAUTIONS PRINTED ON THE PACKAGE, AND WHICH ARE REPEATED BELOW, ARE FOR YOUR PROTECTION
LEARN THEM AND OBSERVE THEM!

FIG. 11.—Main headings of warning notice issued to users of parathion by Cyanamid Co., New York.

powders, exhaust ventilation should secure that this substance is absent from the atmosphere. Protective clothing must include overalls, gloves, boots, cap, and underwear, which are laundered each day and changed immediately if accidentally splashed. Ordinary clothing must be protected from possible contamination. Respirators should be available in factories for use in emergency; in field operations

they must be worn during dusting operations and the diluting of wettable powders. Thorough washing before eating or smoking is necessary, and a bath should be taken at the end of the day's work. These instructions, together with an account of the symptoms of poisoning, appear on the labels of containers as shown on the preceding page. The attention of all workers exposed to risk should be directed repeatedly to the toxic properties of these compounds and the protective measures emphasized and enforced.

No cases of poisoning from parathion or related compounds have been reported in Great Britain. Doctors should be prepared to recognize this new occupational hazard, since treatment with adequate doses of atropine is a matter of urgency if symptoms of poisoning occur.

In the preparation of this lecture I have had the valuable assistance of Dr. P. L. Bidstrup. In addition I have had the help and advice of many other friends and colleagues, particularly Professor S. P. Bedson, Mr. L. N. Duguid, Dr. S. W. Fisher, Dr. D. G. Harvey, Miss E. Hunter, Professor L. Hunter, Dr. M. E. F. Hunter, Dr. S. A. Henry, Dr. M. H. Jupe, Professor Sir Ernest Kennaway, Dr. A. C. Klein, Professor R. E. Lane, Dr. R. Lovell, Dr. E. R. A. Merewether, Dr. E. L. Middleton, Professor Dorothy Russell, and Dr. W. W. Woods. For many of the photographs, drawings, and charts reproduced here I am indebted to Miss P. Archer and Mr. H. S. Edwards.

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A recent issue of the *Statist* (February 18, p. 210) discusses the use of radioactive isotopes in industry. It is not difficult, it says, to see that the use of radioactive tracers for the location and assessment of certain elements in the body is likely to have many corresponding applications in industry. This use is already reflected in metallurgy, notably in the analysis of steel, and without doubt will be prominent among the activities of the newly opened laboratories of the British Non-Ferrous Metals Research Association. A United States patent takes radioactive tracers into the rayon industry, to determine the specific gravity of fluids used in the manufacture of viscose through the measurement of their radioactivity; and it is believed that the number of isotopes which could be of value in the radio industry is large. The uses of isotopes range from process control in general to oxidation and corrosion, and include such diverse subjects as printing ink transfer, rubber vulcanization, vapour leakage, and sedimentation. The most impressive adaptations of the technique are perhaps in studies concerned in self-diffusion in alloys and metals and segregation in ingots and castings. In the oil industry radioactive cobalt has been found of value for cleaning purposes. The article quotes a statement by Dr. Seligman, of Harwell, that for every 2,000 medical publications on the use of isotopes there are 12 concerned with their industrial application.

ORAL THYROXINE IN TREATMENT OF MYXOEDEMA

BY

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The first report of the use of synthetic thyroxine in the treatment of myxoedema appeared as an addendum by Murray Lyon (1927) to the original paper by Harington and Barger (1927) describing the first synthesis of thyroxine Two cases were treated, and their symptoms appeared to be satisfactorily controlled for short periods by dosages of 4 to 5 mg. of the new drug, injected intravenously Since then a number of workers have used thyroxine to treat myxoedema (Thompson, Thompson, and Dickie, 1933; Lerman and Salter, 1934; Means, 1935). Various routes of administration were tried and dosages varied from 0.3 to 1.5 mg. a day. More recently the activities of D- and L-thyroxine on human subjects have been compared by Pitt Rivers and Lerman (1948). In this study the drugs were administered by daily intravenous injections.

Few of these workers seem to have considered the use of thyroxine as a serious alternative to thyroid extract, and the general conclusions reached, particularly in the 1933–5 period, were to the effect that thyroxine by mouth was either inferior to thyroid extract or, at all events, possessed no advantages over it. No very definite reasons were produced for these conclusions. In this work as a whole one rather gains the impression that the subject was abandoned owing to the high price of thyroxine at that time and because adequate supplies of the drug were in any case not available for general distribution. As a result we find that thyroxine has in fact been omitted from the latest edition of the *British Pharmacopoeia*.

Recent developments in the synthesis of thyroxine (Borrows, Clayton, and Hems, 1949; Chalmers, Dickson, Elks, and Hems, 1949) seem to have altered the possible future of synthetic thyroxine. Although DL-thyroxine has been on the market for some years it appears to have been little used, and a new preparation of L-thyroxine sodium has now appeared. It seems likely that in the future the price of synthetic thyroxine may well be able to compete with that of thyroid extract. In view of this and of the occasional doubts which have been expressed about the validity of the present method of standardizing thyroid extracts (Gaddum and Hetherington, 1931; Means, Lerman, and Salter, 1933; Frieden, Tuckich, and Winzler, 1949), we felt that a new approach to the question should be made, and were fortunate in obtaining samples of a number of synthetic thyroxine derivatives from Glaxo Laboratories Ltd. for clinical trial. The preparations used were L- and DL-thyroxine, L- and DL-thyroxine sodium (monosodium salts), and DL-N-formyl thyroxine. The L-thyroxine sodium contained five molecules of water of crystallization, but the doses are expressed on a dry-weight basis. Nine patients with well-marked myxoedema have been treated by mouth with one or more of these preparations over a total period of 18 months.

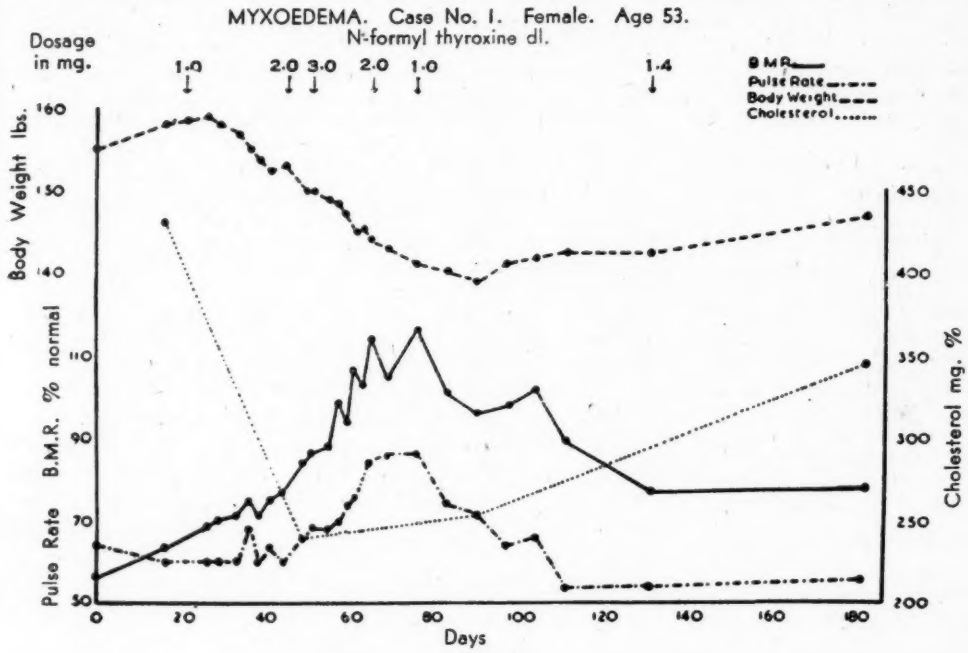

FIG. 1

Case Reports

The charts summarize the results of investigations during the initial period of treatment in each case, except Case 9, in which the metabolic data were incomplete.

Case 1 (See Fig. 1)

A married woman aged 53 had had puffiness of the face and eyes for three months, breathlessness for two years, and for six months lassitude and a desire to sleep. She had gained 2 st. (12.7 kg.) in weight in six months.

On examination she was seen to be a typical case of myxoedema. Pubic and axillary hair was absent,

Treatment.—1 mg. of DL-formyl thyroxine was started on April 22, 1948. This was increased to 2 mg. daily, then to 3 mg. Response to treatment was satisfactory. She became much less constipated after one week, and noticed a definite improvement in her memory. Three weeks after commencement of treatment she noticed a definite increase in her energy and felt vastly better. She said the growth in her eyebrows had increased. Serum cholesterol dropped from 432 to 238 mg. per 100 ml. Renal function rose from 49% to 81% of normal. B.M.R. rose from −37% to +3%. Capillary microscopy showed spastic changes said to be typical of myxoedema. These changes persisted, but are now for the first time, one year and seven months after starting treatment, beginning to revert to normal. She has been on 0.2 mg. of L-thyroxine sodium for one month.

Comment.—This patient has been rather erratic in attendance and has discontinued treatment on one or two occasions. Nevertheless on the whole she has made satisfactory progress. The observation period was one year seven months.

Case 2 (See Fig. 2)

A married woman aged 63 was diagnosed as a case of myxoedema in 1936, and treated with dried thyroid extract. In

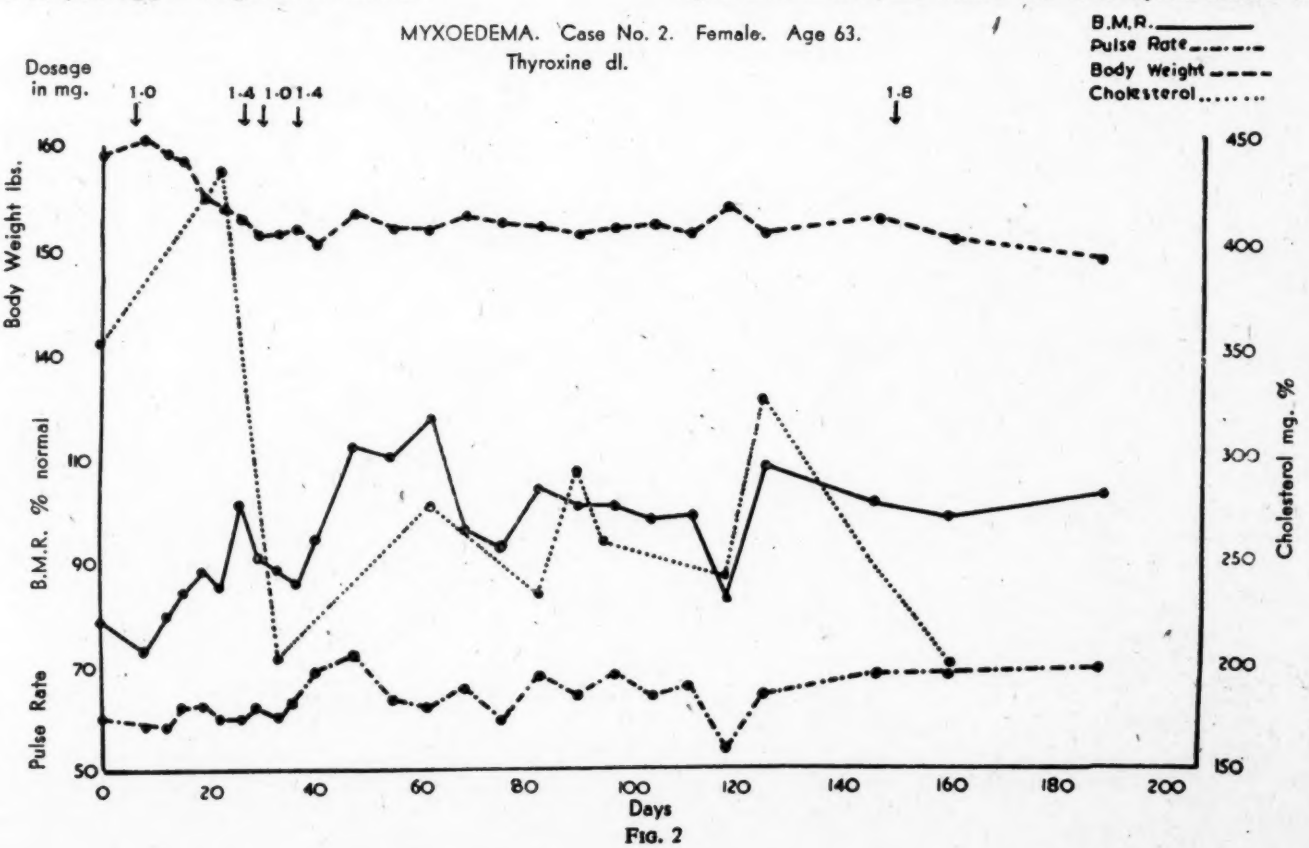

FIG. 2

1946, after ten years' treatment, she ceased to attend. After eighteen months there was a gradual return of symptoms.

On examination typical myxoedema was noted. Her blood pressure was 170/100. Renal function was 64% of normal. The initial B.M.R. was −21%, and serum cholesterol 437 mg. per 100 ml.

Treatment.—DL-thyroxine 1 mg. daily was given. Within a week she began to feel better and lost weight. In a fortnight her voice had almost returned to normal. Serum cholesterol dropped to 205 mg., and urea clearance rose to 81% of normal. Improvement was in every way satisfactory. Thyroxine was increased to 1.4 mg. a day. Her only disability was that the hair continued to fall out. Her energy was still slightly subnormal. Thyroxine was increased to 1.8 mg. a day. One month later she stated that she had stopped "falling about" and was now entirely steady on her feet, although her gait had always been unsteady since the onset of myxoedema. Her hair was now falling out much less. Treatment was changed to DL-sodium thyroxine 1 mg. a day, then reduced to 0.6 mg. after two months. Two months later treatment was changed to L-sodium thyroxine (0.3 mg. a day).

Comment.—Improvement was entirely satisfactory when on 1 mg. of DL-thyroxine sodium. Her B.M.R. rose to +22% and serum cholesterol dropped to 206 mg. On the reduced dosage she continues to be well. She appears to be at her best when the cholesterol reading is slightly raised and the B.M.R. is within the normal range. The only time the cholesterol figure has been within normal limits was when other symptoms suggested that dosage was excessive. She has been on L-thyroxine sodium for four months. Her present dose is 0.2 mg. a day. The observation period was one year five months.

Case 3 (See Fig. 3)

A married woman aged 57 had had swelling of legs and ankles for 12 years. For the past 10 years she had frequently fallen and injured herself. In the past two months her speech had become slower, her skin was very dry, and her hair had fallen out from the scalp. Her voice changed and became croaking in nature; her eyes became puffy and her memory had deteriorated. She also became constipated and intolerant of cold.

On examination typical myxoedema was noted. There was a high malar flush, and the abdomen was flabby and protuberant. The initial B.M.R. was −27%, the serum cholesterol 454 mg. per 100 ml. *X*-ray films showed an increase in the transverse diameter of the heart, the left ventricle being somewhat enlarged. The electrocardiogram showed T_1, T_2, and T, negative, with P–R_2 greater than two seconds.

Treatment.—DL-thyroxine 0.2 mg. daily was given for three days, then 0.4 mg. for four days, and then 0.6 mg. daily for a further four days, gradually increasing to 2 mg. daily. She was then changed to DL-formyl thyroxine (3 mg. a day), on which she was discharged from hospital. Later she was changed *to* DL-thyroxine sodium. She has now been on L-thyroxine sodium for three months. Her present dose is 0.3 mg. a day.

Progress.—Progress throughout was satisfactory. Constipation disappeared within a fortnight. Within a week her cerebration was quicker and she felt more alert. Before discharge from hospital her serum cholesterol was 195 mg. per 100 ml. and B.M.R. −8%. Seven weeks after the starting of treatment the E.C.G. showed T upright in all leads. The observation period was one year six months.

Case 4 (See Fig. 4)

A man aged 58 had an increase in weight seven months before admission, with huskiness of voice, dryness of skin, numbness of fingers, and falling out of hair.

Examination revealed a typical case of myxoedema. Heavy pouches were under the eyes, the eyebrows were thin, cerebration was slow, and the skin dry and coarse. The right arm was wasted from past nervous disease—? poliomyelitis. Capillary microscopy was normal. The initial B.M.R. was −39%, the serum cholesterol 308 mg. per 100 ml. The renal function was 62% of normal.

Treatment.—He was at first given DL-formyl thyroxine 1 mg. daily. After six days the dose was increased to 2 mg. daily for three days, and to 3 mg. for 23 days. There was marked clinical improvement, which preceded any alteration in the B.M.R. readings. The first thing noticed was that he became mentally more alert and the pouches under the eyes disappeared; the skin then lost its puffiness and became normal in texture. The renal function rose to 95% of normal. Improvement started within a week of treatment. Later 1 mg. DL-thyroxine sodium was given daily.

Four months later, as an out-patient, he reported wasting of the small muscles of both hands and the forearms, with muscle fasciculation. This was first noticed in the muscles of the right upper arm, and later spread to include all the muscles of the upper and lower limbs. He gradually lost his power of grip. These changes were also present in the previously wasted right arm. A month later he noticed wasting around the hips, and complained constantly of gnawing pains in the legs. At the same time fullness and tenderness appeared in both breasts. His energy was less than before treatment. He had difficulty with shaving because of the weakness of grip and clumsiness of fingers.

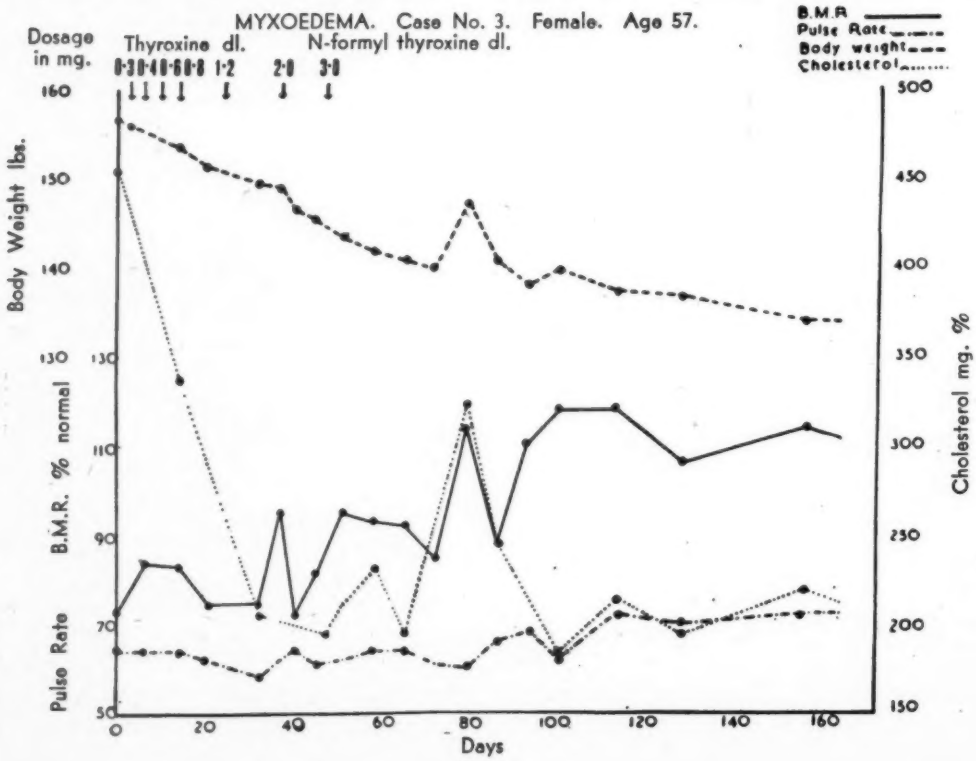

FIG. 3

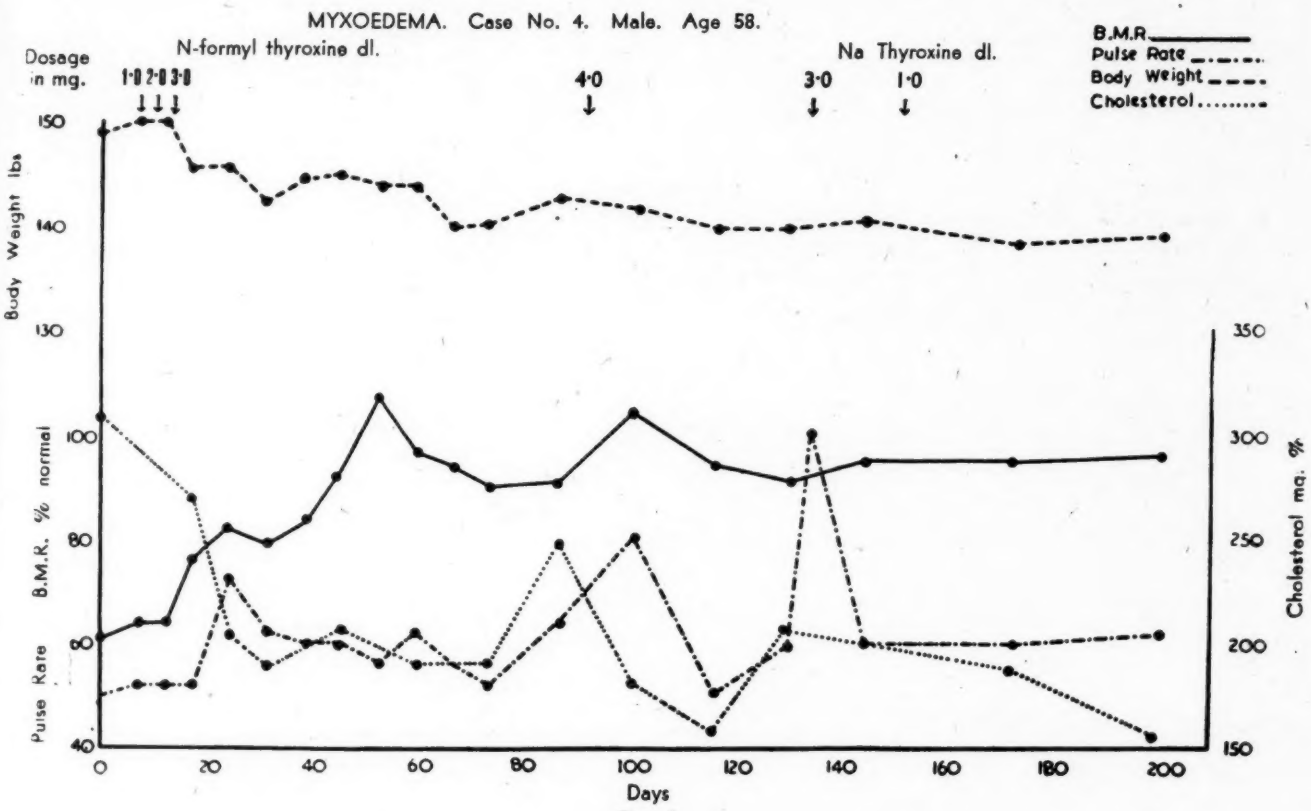

FIG. 4

Examination showed pronounced wasting of the thenar muscles of both hands. A fortnight later both thenar and hypothenar eminences were definitely reduced, and the left deltoid also appeared to be wasted.

He was readmitted to hospital and therapy was discontinued. The B.M.R. at this time was +2%. Three weeks after discontinuing the drug he felt the muscle movements distinctly less, and the breasts, though still enlarged, were no longer tender. He gradually slipped back into his myxoedematous state, the breast swelling disappeared, and fasciculation, though much less apparent, is still noted by the patient and his grip seems to be weaker. He still complains of pains in the thighs, formication in the hands, weakness of grip, and a strange gritty sensation in the muscles of the thighs. He is at present on ½ gr. (32 mg.) of dried thyroid extract a day.

Comment.—Diagnosis in this case lay between progressive muscular atrophy and a myopathy due to treatment. Our impression is that it is now more probably a progressive muscular atrophy, which appears to be more pronounced when his metabolic rate is returned to normal and is masked or retarded when he is slightly myxoedematous, though the breast symptoms suggest a therapeutic effect in the first instance. For the past nine months, therefore, he has been kept with the B.M.R. on the negative side. In our opinion treatment has not caused the condition but has made manifest an underlying pathological process which becomes masked and retarded in the hypothyroid state. The observation period was one year two months.

Case 5 (See Fig. 5)

A married woman aged 43 had thyroidectomy performed in June, 1948, for a simple colloid goitre. Since then she had noticed the cold acutely and was unable to keep warm while convalescent from the operation. She also suffered from attacks of extreme dyspnoea. This was found to be due to bilateral immobility of the cords, with an inadequate airway.

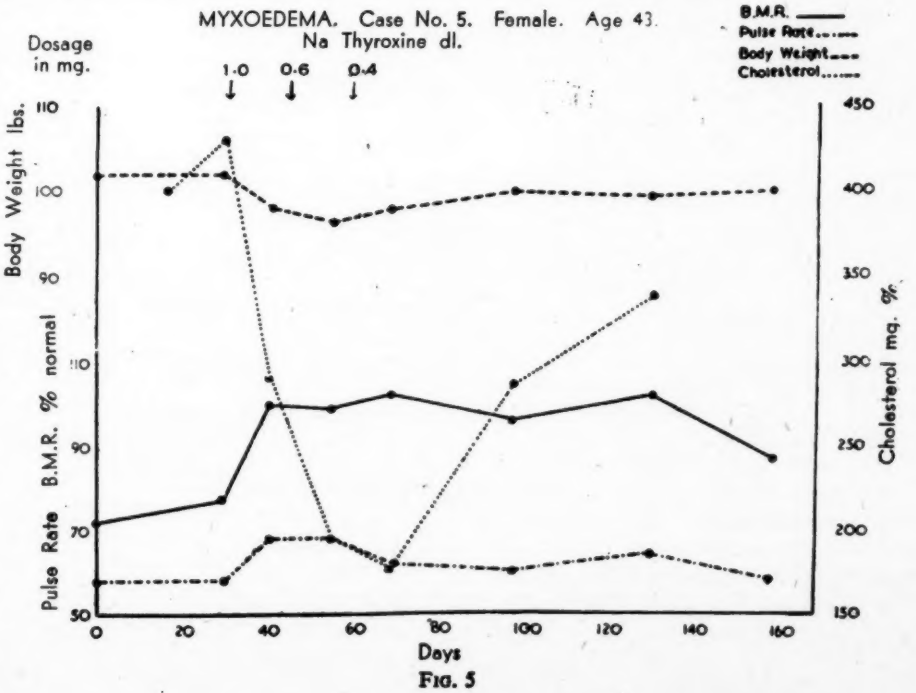

FIG. 5

In addition to this complication of thyroidectomy she suffered temporary hypoparathyroidism and developed signs of myxoedema. Her initial B.M.R. was −28%, serum cholesterol 430 mg. per 100 ml., and serum calcium 9 mg. per 100 ml.

Treatment.—This began with 1 mg. of DL-thyroxine sodium a day. Within a week she felt warmer, had much less lassitude, but complained of aches and pains in the extremities and pins-and-needles in the arms and later in the legs. The sodium thyroxine was reduced to 0.6 mg. a day. On this she felt much better. In view of a continued slight weight loss, dosage was reduced to 0.4 mg. a day. On this she appeared to make satisfactory progress. Her only complaint now is of the dyspnoea caused by her laryngeal condition. She has been on L-thyroxine sodium for three months. Present dose, 0.15 mg. daily. The observation period was one year.

Case 6 (See Fig. 6)

A married woman aged 51 had thyroidectomy performed in 1938. In 1944 her periods ceased. She felt the cold intensely: she said, "It is more than just ordinary external cold; I feel as if my blood is chilled." Her energy was subnormal; she always felt tired. Her bowels were constipated.

On examination lid lag was still present. Her eyelids were puffy, the skin dry, and reflexes were slow but gave full

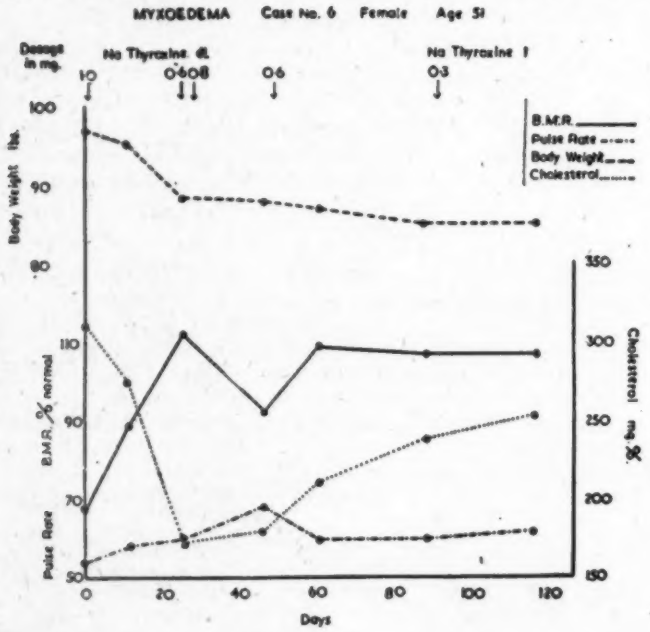

FIG. 6

response. The initial B.M.R. was −32%, serum cholesterol 312 mg. per 100 ml., and the E.C.G. typical of myxoedema.

Treatment.—Within 14 days 1 mg. of DL-thyroxine sodium daily produced a distinct improvement in her mentality. She felt brighter, was much less tired, and her memory had improved. She was now "hot all the time" instead of cold, and actually complained of hot sweats. She also had aches in the ankles, hips, and legs which she had had from time to time in the past. Improvement had been definitely noted within seven days of the beginning of treatment. As it was felt we were overtreating, the dose was dropped to 0.6 mg. a day. Subsequently she was put on L-sodium thyroxine 0.3 mg. daily, later reduced to 0.2 mg. daily. On this she has remained well.

Comment.—The response to treatment seemed to be very rapid and dramatic in this case. Response was almost too rapid, and aches and pains noted in the past returned as her B.M.R. rose. Since that time her progress has been satisfactory. The observation period was 11 months.

Case 7 (See Fig. 7)

For a year a married woman aged 68 had had flatulence, feelings of weakness with a bloated feeling in the abdomen, and had noticed that her actions had become increasingly slower. The eyes had become puffy six months previously, and her voice had been husky for two months. Her younger sister had developed myxoedema at the time of the menopause.

Examination revealed the typical appearance of myxoedema. The hair was coarse and rough, the eyebrows were thin, and the skin dry and parchment-like in colour. The initial B.M.R. was −23%, and the serum cholesterol 312 mg. per 100 ml. *X*-ray films of the heart showed some enlargement of the left ventricle. The E.C.G. was characteristic of myxoedema.

Treatment was started with 0.3 mg. of L-sodium thyroxine given 0.2 mg. in the morning and 0.1 mg. at night. Improvement is shown in Fig. 7.

Progress.—Within three days there was an improvement in her well-being and slight diminution in the bagginess under

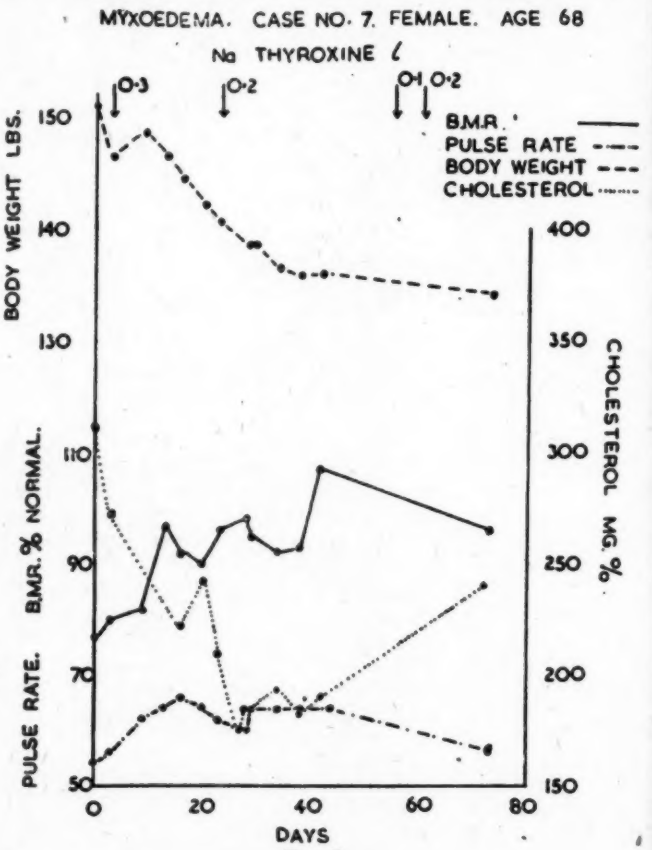

FIG. 7

her eyes: in five days this was obvious to all. At 10 days speech was distinctly improved. At 13 days she had lost all lethargy and was stronger on her feet. At 16 days the skin was obviously less dry and all scaliness was disappearing. One month after the starting of treatment she had marked discomfort under the lower end of the sternum after meals. In the past she had suffered from dyspepsia. These symptoms resembled her previous dyspeptic pain, which had disappeared at the onset of myxoedema. The pain bore no relation to effort, but was closely related to food.

Comment.—Improvement in this case on L-sodium thyroxine appeared to be quicker than that noted in previous cases on thyroid extract. In every way it was as complete as any seen previously. It is of interest that the previous symptom of dyspepsia, which had as it were become submerged in her myxoedematous state, reappeared as the myxoedema was relieved. The observation period was four months.

Case 8 (See Fig. 8)

A married woman aged 51 had a history of myxoedema of one year's duration, more pronounced symptoms appearing three months previous to admission.

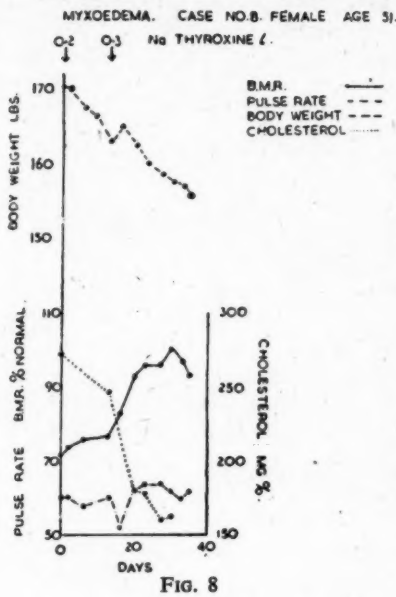

FIG. 8

Examination revealed typical myxoedema. Hair coarse and brittle, eyes puffy, and skin very dry; B.P. 135/90. In addition a mild seborrhoea was present, with dermatitis in the flexures. The initial B.M.R. when she was an out-patient was −35%, and the serum cholesterol 298 mg. per 100 ml. Cardioscopy was normal. The heart showed poor pulsation. The E.C.G. revealed low-voltage curves with T flat in all leads, typical of myxoedema.

Treatment. — She was started on 0.2 mg. L-thyroxine sodium daily. Within five days the skin of the hands felt smoother and softer, and within seven days she thought her voice had improved. After seven days she could put her ring on the correct finger, which she had previously not been able to do. As progress thereafter appeared somewhat slow, dosage was increased to 0.3 mg. daily. The B.M.R. had risen to 83% of normal by the sixteenth day of treatment. The observation period was five months.

Case 9

A married woman aged 75 had had thyroidectomy performed 27 years ago. For three to four years past her hair had become coarse and had been falling out. Over the same period typical skin and periorbital changes had occurred. For six months past she had been constipated and her voice had become hoarse and croaking, lower in pitch than previously. Intolerance to cold was marked.

This was a case of typical myxoedema, with slow speech and slow cerebration. Pulse regular, 60 beats per minute; initial B.M.R., −42%; serum cholesterol, 400 mg. per 100 ml. Microscopy showed the thin elongated capillary loops characteristic of myxoedema. Urea clearance was 42% of normal. *X*-ray films of the heart showed slight enlargement to the left. The E.C.G. was characteristic of myxoedema.

Treatment.—DL-thyroxine sodium, 0.2 mg. daily, was started; this was gradually increased to 0.6 mg. Within 16 days of the onset of treatment the skin was less dry and the voice more musical. Clinically she seemed to be responding to treatment quite rapidly. An E.C.G. on February 21, 18 days after the initial E.C.G., showed T_1 and TCR_7 now becoming upright. Three weeks later T_1 had become deeply negative, also TCR_4. Three days before this E.C.G. was taken she had developed pains of anginal type in the praecordium. At this time her B.M.R. was −33% and the serum cholesterol 400 mg. per 100 ml. Nevertheless, thyroxine was reduced to 0.4 mg. a day. An E.C.G. performed subsequently showed low voltage with some left axis deviation. T_1 and T_4 became less negative.

Comment.—This patient was older than the average case we have treated. It is probable that her myocardium had degenerative changes quite apart from her myxoedematous state. Anginal pains, not a previous feature, appeared on treatment. Apart from the anginal pains, which have since then not been a trouble, progress on treatment was satisfactory. The observation period was 10 months.

Frequency of Dosage

With thyroid extract frequency of dosage has probably varied considerably in the past, and there seems to be no certainty about the optimum timing of the doses. We have attempted to obtain evidence on this point with L-thyroxine by performing basal metabolic rate estimations at various intervals after dosage. For this purpose we chose three patients with myxoedema stabilized on a maintenance dosage. The results are shown in Table I. It will be seen that no evidence was obtained of any significant variation in metabolism up to intervals of 24 hours after the dose. It therefore seems probable that a single daily dose, which may conveniently be taken after breakfast, is sufficient.

TABLE I.—*Basal Metabolism at Varying Intervals After Oral Dosage with* L-*Thyroxine Sodium in Myxoedema*

Case No.	Hours After Last Dose	B.M.R. % of Normal
3	4	99
	8	105
	12	98
	15	104
7	5	98
	8	95
	12	93
	15	92
8	4	100
	8	97
	12	93
	24	96

Discussion

A summary of these results is shown in Table II, and our impressions of the work are as follows:

TABLE II.—*Oral Maintenance Doses of Thyroxine Derivatives in Myxoedema*

Drug	No. of Cases	Approximate Daily Dosage (mg.)
L-thyroxine sodium	8	0·15–0·3
L-thyroxine	5	0·3–0·5
DL-thyroxine sodium	6	0·4–1·0
DL-thyroxine	2	1·4–2·0
DL-formyl thyroxine	3	2·0–3·0

1. All the drugs tested can be used in the treatment of myxoedema with perfectly satisfactory clinical results. During the last few months we have used only L-thyroxine sodium, which was the most active compound tried. In every case all the symptoms of myxoedema were relieved and the metabolism could be restored to normal with a suitable dosage.

2. Improvement seemed to begin rather sooner than would have been expected on 1 to 2 gr. (65–130 mg.) of thyroid a day; but this may be a matter of dosage, and we were unable to find an exactly parallel series of cases treated with thyroid extract for comparison. This rapidity of action is not necessarily advantageous, and in one or two cases led to complaints of muscle pains, etc., as with overdosage. In these cases the initial dose was probably excessive, and we have not encountered this trouble since we adopted the procedure of starting the patients on an average maintenance dose (0.15 to 0.3 mg. L-thyroxine sodium a day). A sudden restoration to normal is neither possible nor desirable, and although the major symptoms may disappear within three or four weeks and normal metabolism may be regained in this time, the patient does not in fact become completely normal for a further six to eight weeks.

3. No untoward side-effects were noted except those which could be attributed to overdosage. As with other thyroid preparations, the danger of overdosage is a real one and with thyroxine the symptoms are very similar to those described by Means (1935) as occurring with overdosage with thyroid extract. The usual complaints were of muscle pains, nervousness, and palpitations, with some

anginal pain in one case in which there was probable pre-existing myocardial degeneration.

4. As regards regulation of dosage, our results bear out the dictum of Means (1935) to the effect that the proper dosage of thyroid for a patient with myxoedema is the smallest dose which will relieve the symptoms. Although in our cases we usually succeeded in restoring the basal metabolic rate and serum cholesterol level to within normal limits, it was notable that the patients were usually more comfortable at a lower dosage than that required for this purpose. In such cases there was a tendency for old symptoms of past disorders to be resurrected—e.g., dyspepsia, pains in shoulders, arthritic pains, etc.—which had been, as it were, submerged in the myxoedematous state. It is probably better, therefore, not to attempt complete restoration of normal metabolism in the average case of myxoedema, and if the B.M.R. is to be used as a check on treatment a figure of 90% of normal would be an appropriate level at which to aim.

5. The thyroxine has been administered to most of our patients in a single daily dose after breakfast, and it appears from the metabolic data that there would be no advantage in giving the drug more frequently than this (Table I).

6. It is of theoretical interest that the iodine equivalent of our average maintenance dose of L-thyroxine sodium (0.2 mg. — 0.13 mg. iodine) is approximately the same as that of an average maintenance dose of thyroid extract (1.5 gr. — 0.1 mg. thyroxine iodine). This would suggest that the former drug is absorbed from the alimentary tract about as well as the active principle of thyroid extract.

Conclusion

While we are not in a position to say that L-thyroxine sodium is any better in the treatment of myxoedema than a reliable thyroid extract, in our opinion it is certainly equally satisfactory. It would appear, therefore, that there might be definite advantages in its use on the score of greater reliability. Since synthetic thyroxine does not require any biological or chemical standardization it provides a substance which can be used with equal confidence in any part of the world.

Summary

Nine cases of myxoedema have been treated orally with various synthetic thyroxine preparations over a period of 18 months.

All the drugs tested gave perfectly satisfactory clinical results, though L-thyroxine sodium (average daily dose 0.15–0.3 mg.) was the most active of the compounds used. With a suitable dosage all symptoms of myxoedema were relieved and the metabolism could be restored to normal.

There were no untoward side-effects except those which might be due to overdosage—a real danger. The results bear out the dictum that the proper dosage in myxoedema is the smallest one that will relieve symptoms.

We consider L-thyroxine sodium to be as satisfactory as thyroid extract in myxoedema. Its use might therefore be of definite advantage because of its greater reliability and because it does not need biological or chemical standardization.

We are much indebted to Sir Charles Harington, F.R.S., for reading the manuscript, to the medical and surgical staff of Westminster Hospital for referring cases of myxoedema for study, to various departments of the hospital for special investigations and facilities, and to Dr. K. C. Robinson for assistance with the biochemical investigations.

The thyroxine derivatives used were generously supplied by Glaxo Laboratories Ltd.

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PROTHROMBIN ESTIMATION AND DICOUMAROL THERAPY

BY

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Since the advent of anticoagulant therapy, with the wide spread use of dicoumarol, prothrombin estimations have assumed a much greater clinical significance. Numerous modifications of Quick's (Quick *et al.*, 1935) original one stage method have been introduced, and on the whole with satisfactory results. Much confusion exists, however regarding the interpretation of the results obtained in different laboratories, a circumstance which tends to bring prothrombin estimations for clinical use somewhat into disrepute. The prevailing practice is to plot a curve showing the actual clotting-times obtained with varying percentages of prothrombin and giving the final result as a percentage of normal. Many authorities express the result as a prothrombin index. In order to clarify the present position it is important that certain principles should be fully understood.

1. It has been definitely proved that in carrying out Quick's method of prothrombin estimation optimal concentrations of the thromboplastin and calcium are necessary, and that varying the concentration of these will give different clotting-times especially with plasma having a low prothrombin content. The concentration of calcium can be easily controlled so that this becomes a stable factor. Not so, however, with the thromboplastin, and it is this which gives the varying readings obtained in different laboratories. The ideal is to prepare a standard thromboplastin solution which will give identical results in different laboratories.

2. In preparing a prothrombin percentage curve plasma is diluted with either saline or prothrombin-free plasma, the latter being obtained by absorption with aluminium hydroxide or barium chloride. The curves produced by diluting with saline vary from those obtained by diluting with prothrombin-free plasma, and different curves result from the use of aluminium hydroxide or barium chloride. A further difficulty is that in practice one has to vary the concentration of thromboplastin when using weaker percentages of plasma if optimal plotting-times are to be obtained. It is with these diluted plasmas having a low prothrombin content that the concentration of thromboplastin, and to a less extent of the calcium, becomes critical. Different prothrombin preparations which give apparently equal clotting-times with undiluted plasma may give widely different clotting-times with diluted plasma.

Thromboplastin Preparations

Various methods have been adopted, the most common of which are a dried extract of rabbit brain as originally described by Quick, and Russell-viper venom.

Dried Brain Extract.—This is widely used in America, and is prepared commercially. It keeps well and gives clotting-times of approximately 12 seconds with normal controls. These preparations contain an excess of thromboplastin and when used with diluted plasmas or plasma with low prothrombin content the concentration of thromboplastin may therefore not be optimal.

Russell-Viper Venom.—Venom as a source of thromboplastin is very commonly used in this country in a 1 in 10,000 or weaker concentration. The advantage of venom is the ease of preparation, which simplifies prothrombin estimations. In my experience it has proved unreliable when used with low prothrombin plasmas such as are obtained with dicoumarol. It tends to give false low clotting-times, and when compared with brain extract it "lags" so that it leads to a false and dangerous appreciation of prothrombin content—for example, several of my patients who had haemorrhagic manifestations on dicoumarol gave short (near normal) clotting-times with venom. For this reason I firmly believe that venom solution is dangerous and should be discarded. Its false low clotting-times have been observed by various authorities (Wilson, 1947; Macfarlane, 1948).

Saline Emulsion of Brain Extract

Quick originally used rabbit-brain emulsions but very soon discarded them for that of acetone-dried brain extract. For the last seven years I have used saline emulsions of human-brain extract with consistently good results. The main advantages are the ease of preparation, the stability, and the consistent results obtained. The preparation of these saline emulsions and the results obtained with them have been fully described elsewhere (Toohey, 1941; Owen and Toohey, 1941); I have, however, slightly modified these preparations since then.

Fresh human brain is used, as it is readily obtained from the post-mortem room. Human-brain extract also keeps for longer periods than rabbit brain. It is freed of all membranes and blood vessels and washed in saline. A small portion, enough to cover a shilling, is emulsified in a mortar with approximately 20 ml. of normal saline to which has been added 0.5% of phenol as a preservative. The emulsion is filtered through gauze to remove all gross particles and the resulting solution should be of milky opacity. When this is tested with normal plasma it invariably gives a clotting-time of 10 to 15 seconds. This emulsion, however, contains a considerable excess of thromboplastin, and, while it will normally give good and reliable results with low prothrombin plasma, it tends in some cases to inhibit clotting and may occasionally for this reason give falsely high clotting-times. I therefore dilute the emulsion to a weaker concentration.

A convenient method of dilution is to prepare a solution which is approximately equivalent to that in the tube containing 150 mg. of protein as used for estimation of cerebrospinal fluid protein. This concentration (150 mg.) will give a clotting-time of 13 to 16 seconds with normal controls.

It will be found that the 150-mg. thromboplastin solution will tend to decline in activity to the extent of only three to four seconds over a period of a month, and many preparations will keep for much longer. Several have kept for as long as six months, with a prolongation of only five to six seconds with normal plasma. Many of the more concentrated thromboplastin preparations have remained stable for one year, with a prolongation from the initial clotting-time of only five to six seconds. The weaker the initial concentration of thromboplastin preparation the quicker it tends to become inactive. The simplicity with which these preparations are made renders it unnecessary to keep them for long periods.

It is essential that, in preparation, the emulsion be thoroughly shaken for at least five minutes so that the thromboplastin goes into solution. The preparations are kept in a tightly stoppered container at 4° C. Before use they should again be thoroughly shaken and be left at room temperature for 15 minutes. The addition of 0.5% phenol to the saline prevents bacterial contamination, which I have found is a common cause of rapid deterioration of these saline–brain emulsions. In my opinion it is not necessary to prepare dried brain extract, thus greatly simplifying prothrombin estimations.

Prothrombin Estimations

The difficulty encountered in prothrombin estimation lies in expressing results and also in deciding to what extent the level of prothrombin should be lowered. Most authorities recommend a lowering to between 10 and 30% of normal—a safe level, as bleeding seldom occurs when the prothrombin content is above 10%. Some authorities recommend a prolongation of the clotting-time to twice the normal; this roughly corresponds to 20% of normal. The difficulty in practice of expressing a definite percentage of normal is that prothrombin clotting-times will vary according to the prothrombin content of the plasma and also with the concentration of thromboplastin used. I think that a much simpler interpretation which is of benefit to the clinician can be adopted.

(*a*) A thromboplastin preparation made as described above, which will give a normal clotting-time of 13 to 16 seconds, is used. I do not employ a preparation which gives a normal clotting-time of above 20 seconds, as at that level it tends to decline in activity too rapidly, and it is important to be certain that the thromboplastin is active. Conversely, I do not advocate a more concentrated preparation of thromboplastin with its much shorter clotting-times, usually 10 to 12 seconds, as this strength is not optimal for low prothrombin plasmas and may, as already mentioned, give false longer times. A saline emulsion of brain diluted to 150 mg. of protein as described above will be found in practice to be most convenient.

(*b*) The prothrombin level of the patient on dicoumarol should be maintained between 30 and 50 seconds, using the above thromboplastin preparation. With more than 50 seconds we are veering to the danger level, though many patients have given clotting-times of 60 to 70 seconds without haemorrhagic manifestations. In a carefully controlled series of 30 patients treated with dicoumarol the shortest clotting-time found with haemorrhage was 85 seconds. I consider the absolute time to be of greater importance than a percentage reading, as, when preparing prothrombin percentage curves, plasma is diluted with saline or prothrombin-free plasma, which is an artificial procedure in that one may well dilute other factors taking part in blood coagulation that does not bear a direct relation to what happens *in vivo*.

I do not recommend making prothrombin estimations on diluted plasma, which many authorities do in order to bring out a minor reduction in prothrombin content. In actual practice bleeding has never occurred with a clotting-time of less than 50 seconds. Conversely, whether a clotting-time of 30 seconds is sufficient to prevent the occurrence of thrombo-embolic accidents remains to be proved. In my small series of 30 patients no such accidents did occur when the clotting-time was maintained within the range of 30 to 50 seconds.

Dicoumarol Therapy

Dosage.—It must be clearly understood that there is no standard dose of dicoumarol, and that the reactions vary greatly with different patients. For this reason it is essential that prothrombin estimations should be carried out at regular intervals. Many workers recommend daily estimations. I have found that estimations on alternate days are sufficient, except during the initial stages of treatment—that is, for the first four or five days—and in those cases with widely fluctuating clotting-times that sometimes occur. One factor of great importance with regard to dicoumarol dosage is the age and general condition of the patient. The older and more frail the patient is the more susceptible is he to dicoumarol—so much so that I give a reduced dosage to all those over 65 years. Of six patients who had haemorrhages all but one were over 65. It is important to remember that some patients are much older than their years, and vice versa; and this factor should be borne in mind when using dicoumarol. Some patients are very susceptible to dicoumarol, and haemorrhages can occur with a very small dose: one patient, aged 69, had serious bleeding with a total dose of only 550 mg. of dicoumarol.

Scheme of Dosage.—For younger patients: First day, 300 mg.; second day, 200 mg.; third day, 200 mg.; and then a daily dose of 50 mg., to be varied according to the prothrombin clotting-time. Many young robust people are relatively insensitive to dicoumarol and will need larger doses—for example, 100 mg. daily instead of 50 mg. to keep the prothrombin at a therapeutic level. For older patients (65 years and over): First day, 200 mg.; second day, 200 mg.; third day, 100 mg.; and then 50 mg. daily, to be varied according to prothrombin clotting-time. In the initial stages it is better to give dicoumarol in small divided doses than in a single large dose.

Most authorities usually give an initial dose of 300 mg. of dicoumarol followed by 200 mg.; they then give it according to the prothrombin content as ascertained by daily estimations. I find, however, that this method tends to produce a fluctuating curve. I therefore prefer to give a small daily dose of dicoumarol after the initial heavier dosage—omitting the drug, of course, if the prothrombin falls to a dangerously low level.

In practice I have found the daily microscopical examination of urine for red cells very useful. In many cases their presence foreshadows an impending gross haemorrhage, and as soon as any quantity appear dicoumarol must be stopped.

Conclusions and Summary

Estimation of prothrombin has assumed a greater clinical significance since the use of dicoumarol. Practical difficulties in carrying out the test are mainly due to the inability to standardize and prepare thromboplastin. Quick's method is a simple one, and most convenient for clinical use. The commonly used method of diluting whole plasma with saline in order to bring out an early fall in the prothrombin level is not advocated.

A simple method of preparing a stable and active thromboplastin preparation is essential. The most frequently used preparations are Quick's original acetone-dried brain extract and Russell-viper venom. The latter often gives false low clotting-times, with the consequent danger of overdosage with dicoumarol and subsequent haemorrhage. Preparation of acetone-dried brain extract usually requires skilled technical ability.

A description is given of an alternative and simple thromboplastin preparation made by emulsifying human brain with normal saline to which has been added 0.5% phenol as a preservative.

A thromboplastin preparation which will give a prothrombin clotting-time with normal plasma of 13 to 16 seconds is advised. This preparation usually corresponds with the 150-mg. tube as used in cerebrospinal fluid protein estimations.

For effective dicoumarol therapy a prothrombin clotting-time of 30 to 50 seconds is advised. It is not essential to record the prothrombin level as a definite percentage The absolute clotting-time is considered of much greater clinical importance, and, using an active thromboplastin preparation which gives a clotting-time of 13 to 16 seconds with normal plasma, it is sufficient to maintain a clotting-time of 30 to 50 seconds.

Dicoumarol varies in its activity in different people, some being very susceptible to small doses. This is especially so with the elderly and the frail, who should be given a reduced dose. Conversely, the young and robust will stand much larger doses. After the initial heavier medication to lower the prothrombin to the required therapeutic level, a small daily dose is advocated In the majority of cases it will suffice to estimate the prothrombin level on alternate days after the first four to five days of treatment. A scheme of dosage which has been found in practice to give adequate treatment is outlined. Daily microscopical examination of the urine for the presence of red cells is of value as an indication of the likelihood of more serious haemorrhage occurring

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IODINE AND GASTRIC FUNCTION

BY

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A great number of papers have been written on the influence of iodine and its derivatives on the function of the stomach. The most important question is whether the gastric mucosa has the ability to secrete iodine introduced intravenously or to absorb it. Rose (1930) first presented evidence that the gastric mucosa has this ability. His evidence was confirmed by experiments in animals and men by Pentzold and Faber (1897) and Nencki and Schoumow-Simanowsky (1894). The last-named authors came to the conclusion that it is possible for the gastric mucosa to replace the hydrochloric acid in small part by hydroiodic acid. This conclusion corresponds with that of Lipschitz, who found that the ability of the gastric mucosa of the rabbit to secrete iodine is almost comparable to that of the kidneys. As pointed out by Heilmeyer and Sturm (1928), iodine begins to be secreted by the gastric mucosa while it is still in the peripheral circulation.

This ability of the gastric mucosa to secrete iodine led me to investigate the influence this secretion had on stomach

function and especially on its chemistry, and to see if it is possible to utilize this property as a gastric-function test. Such an attempt was made by Sahli and Strauss (quoted by Schulz, 1934), but without practical results. More valuable findings have been obtained by Henning (1930). He pointed out that the introduction of iodine through a small tube in a stomach the mucosa of which was impaired was followed by the appearance of that substance in the saliva. If the mucosa was intact iodine was absent from the saliva.

Present Investigations

For my investigations I chose 35 adult patients who suffered from various stomach diseases. The technique used was as follows: The patient was prepared as for a basal metabolic test. A duodenal tube was passed so that its tip reached the lowest part of the stomach. The patient was urged not to swallow saliva, and this caution was emphasized throughout the test. After the fasting secretions had been collected, aspiration was continued over fifteen 10-minute periods. The material obtained was placed in graduated tubes. The volume of secretion and the amount of free acid and total acid in the contents of each tube were then estimated. The whole procedure was repeated two days later after the intravenous injection of 5–10 ml. of a 10% solution of sodium iodide (0.42–0.84 mg. of iodine). If there was bile-staining the results were discarded and the test repeated another day.

The cases were divided into three groups. Group I consisted of patients with acute and chronic duodenal ulcer. They came to the clinic complaining of periods of distress, night pain, vomiting, and constipation. When admitted they had had no previous medical care. Measurement of their fasting secretion showed a large volume of juice, the total acidity of which was 70 to 90 degrees. After the intravenous injection of 0.42–0.84 mg. of iodine the total acidity was higher than before, often reaching 100–130 degrees (Fig. 1). It was observed that the free acid and total acid rose according to the intensity of the inflammation of the gastric mucosa. In one such patient the total acidity reached 150 degrees. According to Portis and Bloomfield (1944) only after the histamine test is it possible to obtain such high degrees of acidity.

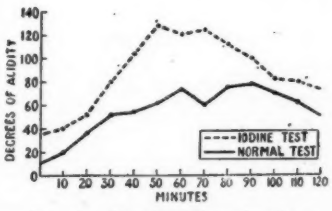

FIG. 1.—Total acidity after intravenous injection of 0.42–0.84 mg. of iodine in a patient of Group I.

Group II mainly consisted of patients with stomach ulcer. A few also had duodenal ulcer. The acidity of the gastric juice of all patients was normal or nearly normal. The total acidity was never higher than 70 degrees. Doses of 0.42–0.84 mg. of iodine were injected intravenously before or during aspiration of the juice. Fig. 2 shows that the reaction of the gastric mucosa to the injection of iodine was not as strong as in patients of Group I. Nevertheless the amount of free and total acid was 20 to 40 degrees higher than before the iodine test. From these figures it can be concluded that the ability of the gastric mucosa to secrete, after the iodine test, a highly acid juice did not last more than two hours. The degree of acidity began to drop after the first hour.

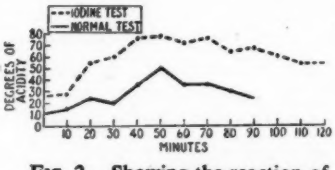

FIG. 2.—Showing the reaction of the gastric mucosa to the injection of 0.42–0.84 mg. of iodine in a patient of Group II.

Group III was composed of patients with chronic alcoholic gastritis, functional achlorhydria, gastritis due to Addison's anaemia, etc. The intravenous injection of iodine in the form of sodium iodide remained without any effect. Only those with alcoholic gastritis showed a slight increase in the total acidity (Fig. 3). It is important to note that the results obtained in Group III were very similar to those obtained after the test with histamine, which is the most powerful known stimulus to gastric secretion.

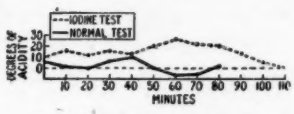

FIG. 3.—Effect of the intravenous injection of sodium iodide in a patient of Group III.

Comment

In analysing the effects of iodine on the gastric mucosa one is confronted with the appraisal of many factors that can influence gastric secretion. One of the most important is the effect of emotion. According to Wittkower (1935) fear, disgust, sadness, anger, and apprehension during the course of an aspiration depress the secretion in some subjects, while in others they increase it. There are still many gaps in our knowledge of the mechanism of gastric secretion. Therefore it is very difficult to state what causes the increase of gastric acidity after the intravenous injection of iodine. It has been suggested that this increase is due to the hydroiodic acid which is formed in the stomach after introduction of the iodine. This opinion is based on the results of investigations of Nencki and Schoumow-Simanowsky (1894) on dogs which were given sodium iodide. But the amount of hydroiodic acid found in the stomach of the dogs was very small. Furthermore, the investigations of Batke (1917) showed that hydroiodic acid is not a normal substance of the body, as are hydrochloric acid and hydrobromic acid; therefore it is not possible for the gastric mucosa to replace the hydrochloric acid by hydroiodic acid.

I believe that the post-iodine hyperacidity seen in the patients of the first two groups was the result of a continuous excessive stimulation of the parietal cells by the iodine which these cells probably secreted. The fact that in patients with alcoholic gastritis and gastritis due to Addison's anaemia no increase of the total acidity was noted after the iodine test further supports my opinion One must also keep in mind that in these cases the histamine secretion was variable and sometimes did not produce free acid. In the first two groups the results after the histamine test were very similar to those obtained after iodine. The lack of any reaction to iodine or to histamine in the patients of the third group must be attributed to the destruction of the parietal cells. Without doubt histamine is a powerful stimulus of gastric secretion, but from my observations in the three groups of patients I find that in place of histamine we can use iodine. Furthermore, iodine is less harmful than histamine.

Summary

A clinical and laboratory study has been made of the influence of iodine on the function of the stomach.

Investigations showed that, after intravenous injection of 0.42–0.84 mg. of iodine in the form of 5–10 ml. of a 10% solution of sodium iodide in patients with duodenal and gastric

ulcer and acute gastritis, the amount of free and total acid was 20–40 degrees higher than before.

In patients with alcoholic gastritis the iodine test had no effect.

The results obtained after the injection of iodine were similar to those obtained after the histamine test.

Therefore it would be better to replace histamine by iodine in testing for gastric function.

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HYPERSOMNIA SYNDROMES

BY

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During recent years there has been a tendency to describe syndromes in which somnolence or hypersomnia has been associated with other symptoms. Some have reported cases of periodic somnolence and morbid hunger (Kleine, 1925; Lewis, 1926; Levin, 1929, 1936, 1938; Kaplinsky and Schulmann, 1935; Critchley and Hoffman, 1942; Ronald, 1946), and a few have described patients suffering from hypersomnia at menstrual periods (Kleine, 1925; Lhermitte and Kyriaco, 1929; Lhermitte, 1942; Lhermitte, Hécaen, and Bineau, 1943). Episodic states of sleep have also been reported by workers at the Frankfurt Clinic (Grosch, 1943). It has been claimed that all these syndromes exist as definite entities.

Clinical Material

In a survey of 2,169 in-patients treated by me in E.M.S. neurosis hospitals during the period 1940–8 there were cases of nearly every kind of psychiatric illness, including a wide variety of sleep disturbances (Pai, 1946b). The present paper is based on a study of 67 male patients who complained either of diurnal somnolence or of hypersomnia. Somnolence is here used to mean drowsiness during which a person is partially aware of what is happening around him. Hypersomnia is a condition in which daily more hours are spent in sleep than in wakefulness. Cases of narcolepsy have been excluded from this study. The ages of these patients ranged from 18 to 27, with an average of 22.6 years. The methods of obtaining social histories and independent factual evidence and of assessing personality have been discussed elsewhere (Pai, 1944, 1945, 1946a).

The Wassermann test was done as a routine, and special investigations such as the fractional test meal, *x*-ray examination, and electroencephalography were carried out in appropriate cases. The staff had strict instructions not to give more than the authorized scale of rations, and individual requests from patients for extra food were ignored.

Clinical investigations consisted chiefly in testing the plantar reflex at intervals and in noting the presence or absence of vocal and motor activities (*a*) during the period of apparent sleep, (*b*) during apparent sleep induced by hypnosis, and (*c*) during narcosis produced by giving intravenously a 10% solution of a barbiturate such as "sodium amytal." The object of these procedures was partly to estimate the approximate duration of physiological sleep and the time spent in the transitional stages between full wakefulness and sleep, and partly to determine which physical signs gave the most reliable indications of sleep.

It was ascertained that the period of so-called sleep consisted of phases of physiological sleep interspersed with waves of partial sleep. Vocal and motor activities were either absent or infrequent during spells of sleep and were more frequent during the intervals of partial sleep. The average time spent in sleep was roughly about four and a half to five hours (Pai, 1949).

Psychiatric Findings

Personality studies and psychiatric investigations revealed that the majority of these patients were immature and inadequate personalities who had previously reacted to stress by producing psychogenic symptoms. In some men the sleep–wakefulness pattern was disturbed by a combination of unforeseen circumstances over which they had no control.

In each and every case psychological and environmental causes were found to be responsible for the symptoms, which were precipitated by lack of suitable employment, by uncongenial jobs, or by boredom. Excessive sleep and abnormal appetite when found in the same patient were due to two entirely different factors, and both symptoms were manifestations of neurosis.

This was perhaps well illustrated by some of the ex-prisoners of war. These men had spent long periods in camps in Germany, Italy, or the Far East. On repatriation they were given permission to draw extra rations and were also granted accumulated leave varying from three to four or more months. During furlough they ate a lot and naturally slept a good deal. There was thus a primary disturbance of the sleep–wakefulness cycle, and quantitative non-pathological hypersomnia became a daily habit.

On the expiry of their leave, instead of being released from the Forces as they had fondly hoped, they were asked to report for duty. They alleged that at the holding battalion headquarters they were made to do drills on the square; and that some of their instructors were young non-commissioned officers who had only a few months' service. The drill bored them and they resented being "ordered about" by young N.C.O.s who had never seen any active warfare. These were some of the psychological factors which helped to maintain the excessive sleep pattern.

The ordinary Army rations given to them at the holding battalion seemed to them inadequate by comparison with the double rations to which they had got accustomed while on furlough. Not all these men could easily adjust themselves to this sudden reduction in diet. Some complained of feeling "always hungry."

Laboratory Findings.—In not a single patient was there any sign of hyperchlorhydria. *X*-ray investigations showed no evidence of gastro-intestinal hypermotility. Stools were also examined for occult blood and amoebic cysts. Some of the clinical and experimental observations made on these patients are described in the following case history, which is well worth recording because of several unusual features.

Case Report

A young man aged 20 was referred for investigation and treatment, his complaints being excessive sleep and difficulty in waking up in the mornings, occasional headaches, and pains in the stomach, groins, and legs.

History of Present Illness.—According to official documents his symptoms started sixteen months earlier, while convalescing from an attack of pneumonia complicated by femoral thrombosis. Several specialists had examined him, and in some hospitals he had been "thoroughly investigated, with negative results." He had no desire to leave the Army, and a Medical Board, having found it undesirable to discharge him until he was fit for civilian work, had placed him temporarily in Category C (for home service and light duties only). This was found difficult to carry out. His own doctor and the officers of his unit had convinced themselves that he had genuine difficulty in getting up in the mornings. These officers reported that it was almost impossible to rouse him, and they testified that various methods had been tried without effect—namely, "cold water on face, opening eyelids, shining a torch on pupils, pulling, slapping, pinching, and shaking; but none of these seemed to disturb him. In fact, all the usual methods have been tried and all have failed." In reply to my special inquiries the officer commanding his unit stated that his conduct and reliability were excellent while awake, but that "the average time he was awake during any 24 hours was less than six hours. From close observation we are convinced that his case is completely genuine."

On admission he was found to be fairly intelligent, and was genuinely worried about his condition. He denied any other causes for worry, as he was quite contented in his unit. He was slim but well nourished, with asymmetry of the chest, gynaecomastia, and fine tremor of outstretched hands. He had prominent veins on the abdominal wall and varicose veins in the legs.

Laboratory Investigations.—Wassermann reaction, negative. Urine, nothing abnormal. Radiograph of skull and chest, N.A.D. Blood-sugar levels and basal metabolic rates were within normal limits. Electroencephalogram: "Abnormal in that the alpha rhythm of 8–10 c./sec. was less well developed and had a lower voltage from the left occipital region, suggesting an abnormality in one hemisphere. It was also deeply modulated and not completely inhibited by stimuli. There were some 6-c./sec. waves, and overbreathing increased their number for a short time." Fractional test meal, N.A.D.

Observations.—It was noticed that at about 7.30 p.m. daily he felt the onset of irresistible drowsiness, and on retiring to bed fell asleep almost instantly. He had difficulty in waking up in the morning, and slept uninterruptedly in spite of the noise (radio, etc.) until about 2.30 p.m., when he awoke of his own accord and complained of feeling hungry. When awake he was bright and lively.

Clinical Investigations.—While he was "asleep" the pupillary reflex, the knee-jerks, and the plantar reflexes were tested at half-hourly intervals and body movements were observed. His sleep was punctuated by spells when the plantar reflex was extensor or doubtfully so; for the remainder of the period of sleep it was definitely flexor. It was roughly estimated that in any eighteen hours of "sleep" he was actually asleep for approximately four and a half to five hours only; for about ten to twelve hours he was in a state of partial sleep closely similar to hypnotic trance. This was confirmed by inducing (when awake) hypnotic sleep, when to all appearances he was fast asleep and could not be roused by the nurses. During this entire phase the plantar reflex was definitely flexor. Under hypnosis the psychological factors were discovered and he was successfully treated.

Results.—During the third week of his stay he woke up in the mornings without any help, worked hard in the workshop, and also took part in team games. In spite of several physical endurance tests he showed no inclination to sleep longer than about eight hours.

Follow-up.—Two years after discharge he was examined by a neurologist, who reported that he was in good physical health although nervous, and that there was no evidence of encephalitis. He has had no sleep trouble for five years.

Discussion

From this study it is obvious that somnolence and hypersomnia without any other evidence of increased intracranial pressure or of endocrine disturbance may be hysterical symptoms. Some of the previous case reports are incomplete, lacking in essential details, and distorted in significance. The term "somnolence" has also been used as a synonym for hypersomnia, and conclusions have been drawn on very inadequate factual evidence. In all the histories there is evidence that the patients were probably suffering from neurosis and that hypersomnia and "morbid hunger" were hysterical manifestations.

Levin's (1936) Case 6 is stated to have "talked and laughed in his sleep." Case 7 had attacks of retrograde amnesia. He was an inadequate and dependent personality who was over-protected by a fussy mother. Case 8 was a mental defective who was also a chronic bed-wetter. That the symptoms of the cases reported by Critchley and Hoffman (1942) were also psychogenic is obvious because (Case 1) "his first attack began . . . when he was working at a rather uncongenial job on radio research."

As regards "morbid hunger," the adjectives abnormal, excessive, ravenous, and so on have been freely used by different authors to describe the subjective experiences of the patients. This is not objective evidence of "hyperchlorhydria and hypermotility of the gut" as stated by Levin. None of the authors has reported the actual quantities of food consumed by the patients or the results of fractional test meals. Critchley and Hoffman, as well as Ronald (1946), could easily have studied this symptom, as food was rationed in this country. It would also have been interesting to watch the consequences of withholding extra food.

Levin's hypothesis that both somnolence and morbid hunger are due to lesions of the frontal lobe is untenable, because such lesions usually produce other well-known symptoms such as euphoria, loss of initiative, perseveration, changes in personality, and so on. From the clinico-pathological material studied by Davison and Demuth (1945) there is no evidence that lesions of the brain responsible for somnolence or hypersomnia also cause gastric disturbances. The association of these two symptoms is purely incidental, and the so-called Kleine–Levin syndrome is not a definite entity. These arguments apply with equal force to other hypersomnia syndromes.

Summary

Sixty-seven patients who complained of somnolence and hypersomnia were studied.

The association of somnolence and excessive appetite was incidental; both were hysterical symptoms.

The case history of a patient is reported.

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A COMPARISON OF THE WASSERMANN AND KAHN REACTIONS

BY

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During the period June to September, 1949, 2,223 Wassermann (Wyler, 1929) and Kahn (1928) tests were carried out in parallel; on some occasions the two tests were carried out on the same day, on others on consecutive days. In order to make the comparison a fair one, when the tests were carried out on consecutive days the Wassermann was done first and the Kahn second, and the Kahn first and the Wassermann second alternately. The Wassermann antigen was obtained from the Ministry of Health Reference Laboratory and the Kahn antigen* from Dr. Kahn himself. Approximately half the specimens came from a V.D. clinic, male and female, and the others comprised those from the general wards of several hospitals and antenatal clinics and routine specimens from prospective blood donors and diabetics.

There was agreement (both tests positive, negative, or doubtful) in 2,110 (95%), partial agreement (one test positive or negative and the other doubtful) in 80 (3.5%), and disagreement in 33 (1.5%). As will be seen from Table I, 194 were positive, 1,899 negative, and 17 doubtful with both tests. Of the 80 in which there was partial agreement, 9 gave a positive W.R. and doubtful Kahn, 33 gave a positive Kahn and doubtful W.R., 31 gave a doubtful Kahn and negative W.R., and 7 a doubtful W.R. and negative Kahn. Of the 27 disagreements that gave a positive Kahn and a negative W.R. 24 were cases of treated syphilis, one was a child presenting no evidence of syphilis but born of syphilitic parents, and two were cases diagnosed as non-venereal and therefore presumably false positives; of the six disagreements with a positive W.R. and a negative Kahn, five were treated cases of syphilis and one was a child, who subsequently gave negative reactions, born of a syphilitic mother; presumably in this case the positive reaction was due to the carry-over of reagin from a syphilitic mother to a healthy child.

TABLE I.—*Analysis of Results of 2,223 Parallel Tests*

Agreement		Partial Agreement		Disagreement	
W.R. negative, Kahn ,,	1,899	W.R. positive, Kahn doubtful	9	W.R. negative, Kahn positive	27
W.R. positive, Kahn ,,	194	W.R. doubtful, Kahn positive	33	W.R. positive, Kahn negative	6
W.R. doubtful, Kahn ,,	17	W.R. negative, Kahn doubtful	31		
		W.R. doubtful, Kahn negative	7		
	2,110 (95%)		80 (3·5%)		33 (1·5%)

The above indicates a very close parallelism between the two tests, the Kahn being rather the more sensitive in *cases of treated syphilis*. No attempt has been made to assess the absolute sensitivity of these reactions, but both showed a very high degree of specificity. On the whole the W.R. seems to be slightly more reliable and the Kahn rather more sensitive, but it is clear that a combination of the two tests is the optimum.

A second series, similar in every way to the first, except that the Kahn antigens were obtained from two other sources, gave essentially comparable results: 98.7% of 2,298 sera showed complete or partial agreement (see Table II) and 1.3% showed disagreement. Of the 31 sera where there was disagreement between the two reactions, 15 gave positive Kahn and negative Wassermann and 16 gave positive Wassermann and negative Kahn reactions; the former included 9 cases of syphilis, 2 in which there was no information, 1 certain false positive, and 3 probably false positives; the latter included 12 cases of syphilis and 4 false positives. Thus it will be seen that there was little to choose between the two reactions in respect of specificity.

TABLE II.—*Analysis of 2,298 Parallel Tests*

Agreement		Partial Agreement		Disagreement	
W.R. negative, Kahn negative	1,950	W.R. positive, Kahn doubtful	16	W.R. negative, Kahn positive	15
W.R. positive, Kahn positive	207	W.R. doubtful, Kahn positive	17	W.R. positive, Kahn negative	16
W.R. doubtful, Kahn doubtful	20	W.R. negative, Kahn doubtful	25		
		W.R. doubtful, Kahn negative	32		
	2,177 (94·7%)		90 (4%)		31 (1·3%)

As interesting side-lights on the above, of 86 routine serum examinations on diabetics 3 (3.5%) were positive; 97 blood donors all gave negative reactions; and of 448 routine serum tests in pregnant women 437 were negative, 1 was doubtful, and 10 (2.2%) were positive.

Summary

Two series of Wassermann and Kahn tests were carried out on 2,223 and 2,298 sera. There was close agreement between the two reactions and both showed a high degree of specificity. Both for diagnosis and for control of treatment of syphilis a combination of the two tests seems desirable.

The finding of 2.2% positive reactions in pregnant women and 3.5% in diabetics indicates the advisability of routine tests on these persons.

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*This antigen was kindly given to me by Colonel L. W. Harrison.

Medical Memoranda

Enteric Intussusception Presenting as a Cystic Abdominal Tumour

The protean manifestations of acute abdominal emergencies are only too well known to the surgeon, and the following case is recorded not merely to demonstrate unusual clinical findings in such a condition but to show how one can be misled in their interpretation. The rarities in medicine are sometimes self-evident if one is acquainted with the condition, but the mistakes in the diagnosis of the commonplace are often due to a wrong interpretation of the clinical findings, even after a careful examination.

CASE REPORT

A girl aged 13 was admitted to this hospital on August 28, 1949. Eight weeks previously she had been admitted elsewhere with colicky abdominal pain. She had had no vomiting at that time, and no significant clinical findings had been elicited. The pain had subsided after two days, and she had been dismissed from hospital after four days. During the four weeks before admission here she had felt vaguely unwell, listless, and lacking in energy. The abdominal pain recurred on August 27 and was more severe than formerly, colicky in character as before, but this time was accompanied by vomiting on several occasions. Her bowels had moved regularly once daily during all this time, and she had had no symptoms referable to micturition.

On admission on the evening of August 28 she was pale, listless, and complained of colicky abdominal pain across the umbilical region. Her tongue was clear and moist. Her temperature was 98.5° F. (36.95° C.), and pulse 98. The abdomen moved freely on respiration, and a large globular swelling was present just to the left of the umbilicus and extending more upwards than caudally. On palpation this swelling proved to be smooth, tense, globular in outline, and about 4 in. (10 cm.) in diameter. It was slightly tender; there was no abdominal muscular rigidity or rebound tenderness. The swelling did not move on respiration, but could be displaced an inch or two across the abdomen, and also in a plane at right-angles to this, and was dull on percussion. No other abnormality was noted during a full clinical examination. Nothing abnormal was found per rectum.

The colicky pain persisted until the morning of August 29, and the patient vomited small quantities of fluid immediately after drinking. Her temperature was 97.5° F. (36.35° C.) and pulse 98. It now seemed clear that this child had a large, globular, fluid-filled swelling in the abdomen which could not have been present to such a degree eight weeks before, and that it had undergone acute change in the past 24 hours. This relatively rapid change would appear to have been either alteration in its blood supply or else infection, more probably the former. A mesenteric or ovarian cyst which had undergone torsion of the pedicle or a volvulus of an intestinal loop seemed to be the most probable diagnosis, particularly the former. It must be emphasized that the vomiting was infrequent and small in amount, and in no way typical of small-intestinal obstruction 24 hours after the onset.

Exploratory laparotomy performed on the morning of August 29 exposed a large jejuno-jejunal intussusception. It was difficult to reduce in the normal fashion, as it was formed of the highest part of the jejunum right up to the duodeno-jejunal flexure, and there was a large quantity of serous fluid between the entering and returning layers of the intussusceptum —hence the cystic nature of the swelling. Reduction was finally completed, and at the apex a polyp was present.

The bowel was viable, a few sero-muscular tears had occurred, which were repaired, and the small portion of bowel with the polyp was resected with end-to-end anastomosis.

Entero-enteric intussusception is by no means an uncommon condition and is often precipitated at the site of a small tumour of the bowel wall. The classical presentation of a sausage-shaped tumour, blood per rectum, colicky abdominal pain, and vomiting, though typical of the ileo-caecal variety in early childhood, may all be absent in the older child and adult, and in this older age group entero-enteric intussusception may present a difficult problem in diagnosis. Yet it is fair to say that the picture presented in this case of a tense, mobile, slightly tender, globular cystic swelling, dull on percussion, does not suggest the true diagnosis.

I wish to express my gratitude to Mr. J. Hinton Robertson for permission to record this case and for his help and advice.

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Gastro-gastric Intussusception Produced by Pedunculated Intragastric Tumour

The following case is interesting enough to be placed on record.

CASE REPORT

The patient, a frail old man of 72, was admitted to a medical ward of the Burnley General Hospital with cardiac failure. Eight days after admission, while under treatment for his cardiac condition, he complained of a feeling of heaviness and pain in his epigastrium and of nausea. Barium visualization of his stomach revealed a gastric ulcer on the lesser curvature, a slight irregularity of the pylorus, and no delay in the emptying rate of the stomach.

The gastric condition was treated medically, and, apart from occasional slight epigastric discomfort, the patient remained free from gastric symptoms until the 31st day after admission, when severe abdominal colic and vomiting suddenly started. He was examined shortly after the onset of these symptoms and found to be shocked and retching almost continuously. His abdomen showed a generalized slight distension and was tender in the epigastric region. No rigidity was present, no mass was palpable, and no peristaltic movements could be seen. Increased intestinal sounds were heard on auscultation, but it was not noted that they were maximal over any particular point. A provisional diagnosis of small-intestinal obstruction was made, a Ryle's tube was passed into his stomach, and an intravenous saline drip was started.

During the next four hours the patient's general condition improved, but his colicky pain and retching, although less pronounced, were still present. Difficulty was experienced in keeping the Ryle's tube in place as a result of the retching, and at no time were any gastric contents aspirated through it. At the end of this four-hour period it was decided that his general condition was good enough to warrant operation.

Operation.—The abdomen was opened through a midline incision under local infiltration analgesia. No small-intestinal abnormality was apparent. On exposing the stomach a part of the greater omentum (subsequently found to measure approximately 4 in. (10 cm.) at its attachment to the greater curvature) appeared to be drawn into a depression on the greater curvature in the lower part of the body of the stomach. This omentum was gripped firmly enough to prevent the tip of the finger being introduced through the margins of the depression. Subsequent palpation revealed a gastro-gastric intussusception with its apex at the pylorus. Gentle traction and manipulation did not reduce it. The duodenum was then examined, and on palpation a mobile rounded tumour about 1 in. (2.5 cm.) in diameter could be felt through the duodenal wall about 2 in. (5 cm.) from the pyloro-duodenal junction. This was easily moved back into the stomach, whereupon the intussusception immediately became reducible. A transgastric exploration of the condition revealed a pedunculated, firm round tumour, 1¼ in. (3 cm.) in diameter, with a 2-in. pedicle attached to the mucous membrane of the body of the stomach in the line

of the greater curvature. The tumour and its pedicle were removed and its origin touched with a diathermy. The presence of a gastric ulcer on the lesser curvature reported in the *x*-ray film was confirmed, a small ulcer ¼ in. (0.5 cm.) in diameter being present. The incision through the stomach wall was repaired and the abdominal incision closed.

The patient's post-operative progress was disappointing. No further symptoms referable to the gastric condition were experienced after operation, but on the fourth post-operative day auricular fibrillation developed and he died of cardiac failure twelve days later.

A report by Dr. G. Behr, pathologist to the County Borough of Burnley, on the specimen removed at operation states: "A small part of the tumour near the base contained normal gastric glands, but most of it had the structure of an adenocarcinoma. This was probably originally an adenomatous polyp which had undergone malignant transformation."

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Multiple Intussusceptions

While it is not uncommon to operate occasionally on a patient with two intussusceptions, I think that the present case is unique in that three were present.

CASE REPORT

The patient, aged 3½ years, was admitted to the Newcastle General Hospital at the end of 1948. The mother said that for the past three weeks he had been suffering from attacks of abdominal pain accompanied by facial pallor. Within a few moments of the onset of the first attack he passed some blood in the stool. These attacks of pain had since occurred daily, but there had been no recurrence of blood in the stool.

Examination on admission did not reveal any abnormality, nor did a barium enema. On the following day he had two attacks of pain, and a tumour could be palpated in the right iliac fossa. A second barium enema showed the barium flowing as far as the caecum. The terminal ileum could not be filled. The caput caeci showed an indentation at the base and a filling defect within its lumen suggestive of an intussusception.

Through a muscle-cutting incision in the right iliac fossa I demonstrated an ileo-ileal intussusception about 2 in. (5 cm.) long, its apex being about 12 in. (30 cm.) from the ileo-caecal valve. It was easily reduced, but a ring of muscle persisted. This was due to the spasmodic contraction of the bowel causing the two layers to adhere firmly together. It was interesting to watch this ring of muscle round the bowel, as it showed the mechanism in the formation of an intussusception. It appears that the longitudinal muscle contracts, the wall bulges out to form a ring composed of the two layers of the wall, rather like a de Pezzer catheter, and subsequently the proximal portion is forced through the distal bowel. No other abnormality could be seen in the bowel, and after five minutes the thickened ring had disappeared. In view of the history suggestive of frequent attacks of recurrent intussusception I removed the child's appendix, in the hope that further attacks would be prevented.

The child made a good recovery from the operation and was discharged home a week later. For the next three days he remained fit and well, and then attacks of abdominal colic lasting for about five minutes began again. The next day he had a severe attack of pain and vomited once. The child was readmitted to hospital and examination did not reveal any abdominal mass. A barium enema on the following day was negative.

The next day the child had two attacks of severe pain and he was given another barium enema. The radiologist reported: "The enema flowed to near the caecum, where it was held up without filling the caecum completely or flowing into the ileum. The appearance was not very definite, but it seemed almost certain that there was an intussusception. Maintained pressure did not appear to have any effect, so it was released and the barium run off by the tube. Shortly after this a vigorous peristaltic movement was seen near the caecum and barium appeared in the ileum. The pain ceased and the impression was that the intussusception had been reduced."

For the next two weeks he was kept under observation. He had occasional attacks of abdominal pain, sometimes with a palpable tumour in the right iliac fossa. Gradually the attacks became less frequent with atropine treatment, and after a week free from symptoms he was again discharged from hospital.

Five days later the symptoms reappeared and he was readmitted. This time a visible and palpable mass was present in the right iliac fossa. It extended to the liver and was slightly tender on palpation. At operation an ileo-colic intussusception with its apex at the hepatic flexure was demonstrated. It reduced quite easily. The terminal ileum was thickened and dilated. This was followed up, and a second intussusception was found about 12 in. (30 cm.) from the ileo-caecal valve. As the bowel still remained thickened I withdrew more of the ileum from the wound, when a third intussusception was found. This was about 2 in. (5 cm.) long, and when reduced showed a small invaginated Meckel's diverticulum at the apex. This was excised. The bowel proximal to this diverticulum appeared normal. The child made an uninterrupted recovery and was finally discharged from hospital ten days later. When last seen, a month ago, he was fit and well and had had no further trouble.

This case was of interest in that a Meckel's diverticulum had made the intestine so irritable that recurrent intussusceptions had been taking place. At operation it was possible to observe the actual mechanism of the production of an intussusception. Finally the irritability of the bowel was communicated along its length so that three intussusceptions separated from each other by several inches of bowel were produced simultaneously.

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Ileo-colic Intussusception of Traumatic Origin

The following case is of interest in that trauma initiated an attack of intussusception.

CASE REPORT

The patient, an inmate of a boys' industrial school aged 17, was admitted to the Colonial Hospital, Port-of-Spain, on April 10, 1948. While boxing at about 5 p.m. the previous day he received a severe blow in the right lower abdomen. He complained of central abdominal pain which became gradually worse, and at 6.30 p.m. he vomited undigested food and was then given a purgative. He was referred to hospital at 7.30 p.m. on the 10th with a diagnosis of "acute abdomen, ? volvulus."

On examination he was seen to be an ill-looking youth. His tongue was coated. Generalized abdominal tenderness and muscle guarding were present, and a tender mobile mass was palpable to the right of the umbilicus. His temperature was 98.4° F. (36.9° C.), pulse 96, and respirations 24. Two enemata were given without result and he was prepared for laparotomy.

First Operation.—Under light cinchocaine hydrochloride ("nupercaine") spinal analgesia the abdomen was opened through a right paramedian incision. It became immediately apparent that the condition was one of ileo-colic intussusception. Reduction was effected with extreme difficulty and it was necessary to resect 33 in. (83.8 cm.) of gangrenous terminal ileum. The ileum immediately proximal to the caecum was viable, and the operation was rapidly completed by forming a double-barrel ileostomy.

The post-operative course was satisfactory and the patient was discharged on May 20, but owing to pressure on beds the closure of the ileostomy was not possible until August 19.

Second Operation.—On August 19 under light cinchocaine hydrochloride spinal analgesia an ileo-caecal anastomosis and

appendicectomy were carried out, and on August 30 the patient was finally discharged from hospital in excellent physical condition and with a strong abdominal wound.

I wish to thank the Director of Medical Services, Trinidad, for permission to publish this case.

JAMES COOK, F.R.C.S.Ed., F.A.C.S.

Haustro-caecal Invagination as a Cause of Intussusception

The condition of haustro-caecal invagination appears to be a rare one; I have been unable to find any case recorded in the British and American literature, although there are some in the German and Italian literature (Erkes, 1937; Sovena, 1940; Grasso, 1940; Scendrate, 1946).

CASE REPORT

A man aged 44 was admitted on December 27, 1948, as a case of "acute appendicitis." He stated that on Christmas Day he had indulged in considerable dietary and alcoholic excesses, to which he attributed his present complaint. Since 10 a.m. on December 26 he had suffered from colicky pain, at first in the epigastrium and later moving to the right iliac fossa. The pain recurred every 10–15 minutes, and "doubled him up." There was nausea but no vomiting, and he had taken only fluids since the onset of his pain. His bowels were not opened on December 26 but were opened before admission, when he had also passed a quantity of dark-red blood per rectum.

He had been in hospital in Cairo in 1921 with (probably) dysentery, but had had no dysenteric symptoms since. There was no other relevant past history.

On examination he was seen to be a well-built man who at intervals of 10–20 minutes "doubled up" as a result of obvious colicky pain. His temperature was 98° F. (36.7° C.), pulse 80, and respirations 18. Local tenderness and guarding were present in the right iliac fossa, and a doubtful mass the size of a hen's egg was present, the rest of the abdomen being slack; there was no abdominal distension; vigorous tinkling peristaltic sounds were heard on auscultation; the liver was not enlarged; the kidneys were impalpable, with no renal tenderness.

Examination per rectum revealed a ballooned ampulla; no neoplasm was felt; and a small amount of dark-red blood was present on the examining finger. The urine contained no abnormal constituents.

An enema produced a coloured fluid with no solid faeces, but with recent blood clots; flatus was passed with the enema.

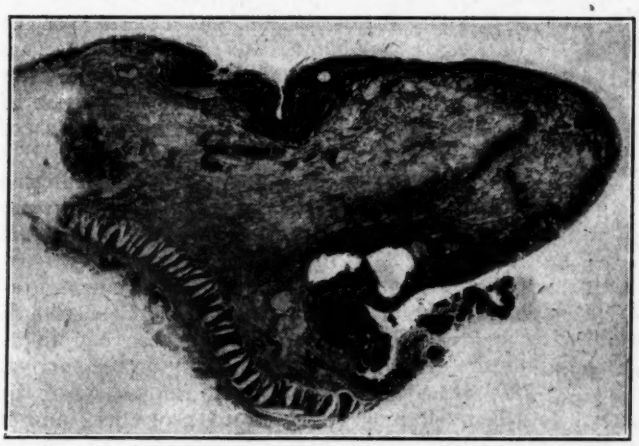
The abdomen was re-examined one hour later, when an obvious mass the size of a tennis ball could be felt in the right hypochondrium. A provisional diagnosis of intussusception was made.

A laparotomy was performed under thiopentone, curare, and gas-and-oxygen anaesthesia. The abdomen was opened through a right paramedian incision centred at the umbilicus. The caecum was found to be intussuscepted into the colon as far as the first 6 in. (15 cm.) of transverse colon; the ileo-caecal valve did not form the apex of the intussusception, but lay in its medial side. There was no distension of the small intestine. The intussusception was reduced easily; the caecum was very oedematous and three "dimples" were seen on the antero-lateral wall. The caecum and lower half of the ascending colon were extremely mobile. The caecum was palpated and three rounded masses were felt. Since idiopathic intussusception in the ileo-caecal region is said to be of extreme rarity in the adult it was decided to explore the lumen of the caecum.

Occlusion clamps were placed on the terminal ileum and on the colon above the caecum, which was opened longitudinally through the anterior taenia. Three purple swellings of the mucosa were found lying one above the other on the antero-lateral wall of the caecum, each corresponding with one of the "dimples" mentioned above. The possibility of a "haustral invagination of the caecum" came to mind, but it was decided to confirm this by taking a biopsy; the affected portion of the caecum was therefore excised and the opening sutured transversely. Appendicectomy was performed and the caecum was sutured to the lateral parietal peritoneum to prevent recurrence of the intussusception. The abdomen was then closed in layers.

Post-operative recovery was uneventful and the patient was discharged on January 7, 1949.

Pathological Report.—The specimen submitted is a portion of caecal wall measuring 6 by 3 cm. The wall is very oedematous; the serous surface has lost its sheen but is not discoloured. In the mucosa are three polypoid masses, each about 1.5 cm. in diameter and 0.5 cm. thick, black in colour. One of these has been sectioned. The microscopical appearance is consistent with that of any portion of the bowel which has undergone strangulation (see illustration).



Section of invaginated haustration showing oedema in submucosa and muscle layers, with haemorrhage into the mucosa and submucosa. (× 6.)

COMMENT

This case conforms in many details with those described in the Italian and German literature. As was found in the majority of cases recorded, the caecal wall was very oedematous and the caecum itself quite mobile. It is suggested that the condition occurred in this patient as a result of undue irritability of the colon following his "Christmas excesses," which, in the presence of a very mobile caecum, produced invagination of the antero-lateral haustration, so initiating a caeco-colic intussusception.

Apart from the usual conditions associated with a tumour in the right iliac fossa, there is the condition known as "chronic non-specific ulceration of the caecum." A case of this has recently been reported by Sangster (1949), and the clinical history was similar to that of a haustral invagination; hemicolectomy was performed and a shallow ulcer found in the most dependent part of the caecum, almost opposite the ileo-caecal valve. The microscopical characteristics were consistent with those of recent ulceration, and it is tempting to consider whether this may not be a late result of haustral invagination.

I wish to thank Dr. A. Wilson Russell, medical superintendent of St. Chad's Hospital, for permission to publish this case; Dr. C. D. Cruikshank for the pathological report; and Mr. P. G. Konstam for advice in the preparation of this report.

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Reviews

CLOTHES AND CLIMATE

Physiology of Heat Regulation and the Science of Clothing. Edited by L. H. Newburgh, M.D. (Pp. 457; illustrated. £1 17s. 6d.) Philadelphia and London: W. B. Saunders Company. 1949.

In the recent war fighting-men were exposed to extremes of climate, and they were often transported rapidly from one climate to another. Thus serious medical and physiological problems were raised, and during the war years much research on heat physiology and on the physiological basis of clothing was carried out on both sides of the Atlantic. In Canada the National Research Council set up a committee to study adverse climatic conditions, and after the entry of the United States into the war the Division of Medical Sciences of the National Research Council of America undertook similar studies.

It was quickly realized that work must be concentrated on the study of the heat-regulating mechanism at extremes of temperature. The maximal rate of heat production that could be tolerated in the hottest and most humid environments had to be ascertained. At the other extreme, knowledge was needed about the time a man could survive in cold water or very cold air, and information had to be gained about the effect of muscular activity on the survival times. There was available little or no knowledge of the extent to which clothing could afford protection, and it seemed that study of the physical properties of fabrics might make it possible to devise new textiles which would give increased protection.

Results of high scientific value and of great practical importance were yielded by these researches, but much of the information has not hitherto been readily available. Under the editorship of Professor L. H. Newburgh fifteen of those who were responsible for the wartime work have now joined to produce this book. Each of the contributors is a well-known authority in his own subject.

The book attempts to describe the responses of the heat-regulating mechanism to any climate that may be encountered on the earth's surface, and it emphasizes the maximal capacity of that mechanism to preserve life under the most adverse conditions. It also shows how far scientifically designed clothing can mitigate the rigours of unfavourable climates. It is not claimed that the work gives the final answers to many of the problems raised, but it does give a great deal more information than was available a few years ago. Professor Newburgh and his colleagues are to be congratulated on their highly informative, very readable, and attractively produced work. It is an important book.

THOMAS BEDFORD.

THEORY OF TISSUE OXIDATION

Heavy Metal Prosthetic Groups and Enzyme Action. By Otto Warburg, translated by A. Lawson. (Pp. 230. 18s.) London: Clarendon Press. 1949.

Many biochemists and physiologists will readily remember the fierce controversy in the 1920's between the supporters of two rival theories about tissue oxidation. This struggle was to decide whether oxidation is due to an iron-catalysed activation or transport of oxygen (Warburg), or to a dehydrogenation by activation of hydrogen in the molecule undergoing oxidation (Wieland). In this book Professor Warburg firmly reiterates his views, and he does not hesitate to point out the errors of commission and omission which he claims have been made by workers in the other camp.

Those who are interested in tissue oxidation, and in enzyme action in general, will appreciate this account of the monumental work of Warburg and his colleagues on tissue oxidation catalysts, and more particularly the iron-catalysed oxidations. Among other topics the author discusses the action of narcotics, carbon monoxide, and cyanide on chemical processes in the cell, the well-known "charcoal model" (Warburg) and the iron-containing cellular catalysts, including cytochrome oxidase or the "oxygen transporting enzyme" as the author prefers to call it. There are short chapters on copper as the oxygen-transporting constituent of phenol oxidase, and heavy metals in relation to yeast fermentation. The sections on the photochemical reduction of quinone in green cells and the quantum requirement of carbon dioxide assimilation are particularly welcome. The former summarizes publications not readily available in this country, and the latter describes work which has not yet been published.

Many readers of the book will undoubtedly enjoy, at first, the vigour of the author's writing, but it may not be long before they begin to wonder whether all the criticisms can be fully justified. Indeed, it seems at times that Professor Warburg "doth protest too much." This is primarily a book for the tissue oxidation specialist, and a less polemical and more comprehensive work, properly indexed, would have been immensely helpful to a much wider public.

A. WORMALL.

STATE MEDICINE IN NEW ZEALAND

Money, Medicine, and the Masses. By Albert D. G. Blanc, B.Sc., M.B., A.N.Z.I.C. (Pp. 193. 10s. 6d.) Wellington, New Zealand: A. H. and A. W. Reed (182, Wakefield Street). 1949.

This able and provocative book fully sustains the claim of the publisher that the author is in great demand as a popular lecturer on medical and social matters. He has an undoubted gift for clear dogmatic statement and the ability to enforce his argument by apt illustration. Whether he agrees with his views or not I think the reader must concede that Dr. Blanc has made out a convincing case that there should be no monetary barrier to a complete medical service—a theme which runs throughout his book. He is a firm supporter of the New Zealand Social Security Act of 1941, which provides, with many other benefits, a free medical service open to every citizen. This scheme is financed by a 7½% deduction from every income. But Dr. Blanc is well aware of the deficiencies of the scheme as shown by medical experience, and he severely blames the N.Z. Branch of the B.M.A. for many of these by its insistence on payment by items of attendance instead of by a capitation system. He adduces much evidence of the abuse of the system by an unscrupulous minority of the profession. One of its effects has been to double the income of the average general practitioner and to enrich some of the unscrupulous ones. Payment per attendance invites unjustifiable multiplication of items for which the State has to pay. This is shown in the way the cost of drugs has risen—from roughly £279,000 in 1941 to £1,500,000 in 1947–8. There has been a great increase in the prescribing of barbiturates, morphine, and heroin, and of expensive drugs—for example, the sex hormones, which are prescribed "in a manner which may have a place in witchcraft but it has none in scientific medicine."

Dr. Blanc says that for all its defects the system has greatly improved the distribution of doctors in the more remote parts of the country. He discusses the probable developments now that the B.M.A. has begun to realize its responsibilities for the reputation of the profession. His

ideal is a whole-time salaried service, and he says that practically every doctor who has returned from military service agrees that under the Army system he had as much freedom to practise his profession as he ever had in civilian hospitals. This came as a surprise to me, for I remember much testimony to the contrary, but my experience relates to the first war and things may have improved. All the same, I doubt whether Army methods would be approved in family practice. Dr. Blanc gives great praise to the Labour Government for its social legislation, but as his book was written before the recent election it would appear that a considerable number of electors have their doubts on this subject.

There is much interesting information in the book about the medical position in New Zealand, and Dr. Blanc points with justifiable pride to the country's vital statistics, which seem to show that, in his words, "New Zealand is socially healthier and therefore wealthier than any other country in the world."

Good chapters are allotted to the patent-medicine traffic and unqualified practice, and many instructive and amusing examples are given of the ingenuity of the merchant and the gullibility of the public. Theoretically he thinks the free medical service should diminish the trade in patent medicines, and it would be interesting to hear if there are any signs of this.

The interest of this book is sustained from beginning to end. It is one which should not be missed by anyone taking part in the world-wide debate now proceeding on the right way to meet the legitimate demand for a complete medical service—one available to everybody on terms compatible with the self-respect of the individual and the welfare of the community.

ALFRED COX.

A GERMAN TEXTBOOK

Garrè-Stich-Bauer: Lehrbuch der Chirurgie. By Dr. Rudolph Stich and Dr. Karl-Heinrich Bauer. 14th and 15th editions. (Pp. 860; 601 illustrations. M. 60.) Berlin: Springer. 1949.

This is Garrè's well-known textbook of surgery modernized by Rudolf Stich and Karl-Heinrich Bauer. The book is a credit to the authors and the publishers, for the paper and printing are good, the illustrations—many of them coloured—are clear and apt, and the text is sound and fairly up to date.

How many teachers of surgery or medicine have ever studied the technique of teaching or taken the trouble to consider the various types of students who come under their tuition? The fact is that many clinical teachers are amateurs at the job—gifted amateurs maybe—and quite a number (as the students soon discover) are failures. It therefore comes as a pleasant surprise to find as the initial chapter in this surgical textbook a discourse on the different ways in which students approach the subjects they have to study, and the best methods whereby they may be taught. The two main classes of student are said to be those who easily pick up facts and those who can more easily absorb theories; and from this are developed the methods which the teacher should adopt for each type of student.

The rest of the book gives a good but rather condensed account of the main facts of surgery. Penicillin is mentioned in several places, but not so often as it should be. The surgery of the thymus gland is described, but no reference is made to its removal for myasthenia gravis. The book probably contains enough for the student up for his final examination, but it does not go far enough into the subject for those who wish to take any more advanced surgical diploma.

V. ZACHARY COPE.

BOOKS RECEIVED

Review is not precluded by notice here of books recently received.

Histology and Histopathology of the Eye and its Adnexa. By I. G. Sommers, M.D. (Pp. 784. 84s.) London: William Heinemann. 1949.

Roentgen Diagnosis of Diseases of the Skull. Annals of Roentgenology. Vol. 19. By M. Ritvo, M.D. Foreword by G. W. Holmes, M.D. (Pp. 409. 118s. 6d.) London: Cassell. 1949.

Biomicroscopy of the Eye. By M. L. Berliner, M.D. Vol. 2. (Pp. 785. 252s.) London: Cassell. 1949.

Physiology of the Uterus. By S. R. M. Reynolds, M.A., Ph.D. 2nd ed. (Pp. 611. 93s.) London: Cassell. 1949.

Ophthalmic Nursing. By P. Garland. (Pp. 158. 12s. 6d.) London: Faber. 1950.

Allergy: What It Is and What to Do About It. By H. Swartz, M.D. (Pp. 210. 9s. 6d.) London: Victor Gollancz. 1950.

Secretory Mechanism of the Digestive Glands. By B. P. Babkin, M.D., D.Sc. 2nd ed. (Pp. 1,027. 147s.) London: Cassell. 1950.

Microscopic Staining Techniques. No. 1. Compiled and edited by E. Gurr, F.R.I.C., F.R.M.S. (Pp. 24. 1s. 6d.) London: Edward Gurr. 1950.

About Ourselves. By J. G. Needham. (Pp. 276. 15s.) London: George Allen and Unwin. 1950.

Perspectives in Neuropsychiatry. Edited by D. Richter, Ph.D., M.R.C.S. (Pp. 236. 15s.) London: H. K. Lewis. 1950.

Transactions of the Hunterian Society. 1948-1949. Vol. 7. (Pp. 143. No price.) London: The Hunterian Society. 1949.

Health Instruction Yearbook 1949. Compiled by O. E. Byrd, Ed.D., M.D., F.A.P.H.A. Foreword by C. E. Smith, M.D. (Pp. 276. 28s.) Stanford, California: Stanford University Press. London: Geoffrey Cumberlege. 1949.

Malariology. By 65 contributors. Edited by M. F. Boyd. Vols. 1 and 2. (Pp. 1,643. 175s. the set.) Philadelphia and London: Saunders. 1949.

The Administration of Alcoholism Rehabilitation Programs. By S. D. Bacon, Ph.D. (Pp. 47. $0.50.) New Haven, Conn.: Hillhouse Press. 1949.

Los Panadizos. By R. De Vega. (Pp. 365. No price.) Barcelona: Ediciones Byp. 1949.

Sifilis del Sistema Nervioso. By I. De Gispert. (Pp. 332. No price.) Barcelona: Ediciones Byp. 1949.

Lehrbuch der Geburtshilfe für Hebammen. By H. Heidler. (Pp. 363. M. 45.) Vienna: Wilhelm Maudrich. 1950.

Die Tuberkulose von Standpunkt des Internisten. By H. Kutschera-Aichbergen. (Pp. 308. $5.70.) Vienna: Springer. 1949.

Atlas der Blutkrankheiten. By K. Schleip and A. Alder. (Pp. 256. No price.) Berlin: Urban and Schwarzenberg. 1949.

Lehrbuch der Röntgenologischen Differentialdiagnostik. By W. Teschendorf. Vols. 1 and 2. 2nd ed. (Pp. 1,318. M. 156.) Stuttgart: Georg Thieme. 1950.

Geschichte der Pflanzen. By W. Zimmermann. (Pp. 111. No price.) Stuttgart: Georg Thieme. 1949.

Die Chemotherapeutische Tamponade der Lungenkavernen. By G. Maurer. (Pp. 114. No price.) Stuttgart: Georg Thieme. 1950.

Aus dem Leben Fritz Richard Schaudinns. By C. Kuhn. (Pp. 67. No price.) Stuttgart: Georg Thieme. 1949.

Tabellen zur Dosierung der Röntgenstrahlen. By W. Wiebe and L. Grebe. (Pp. 152. No price.) Berlin: Urban and Schwarzenberg. 1950.

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FUTURE OF N.H.S.

Since the Labour Government came into power in 1945 the medical profession has been through a time of storm and stress and the organization of medical services has been put on a new footing in the Welfare State. Whether or not the present Government lasts six months or five years the medical profession will, whatever party is in power, have to be vigilant to see that it obtains those things which it has been promised, and more especially to maintain what Sir Harry Platt in an article elsewhere in this issue calls "our corporate independence." "How far," he asks, "are the freedom and independence accorded to us by society in the past, as one of the learned professions, compatible with the conscious or unconscious aims of that abstraction the Modern State?" This is the essence of the problem facing the medical profession in the next two decades. As our correspondence columns have shown, since July, 1948, many doctors feel that they have lost something of that professional independence which was one of the great compensations of a calling that makes heavy demands on time and energy. In view of some of the nonsense that was talked about the Health Service in the recent election campaign it seems necessary to state once more that the National Health Service was the outcome of a policy laid down by the Coalition Government under Mr. Churchill after the publication of the Beveridge Report in 1942. Fundamentally the National Health Service was a matter not of party politics but of public policy. The framework of the present Act, with its safeguarding Amendment against the introduction of a whole-time full-salaried service, is such that it can be moulded by a medical profession which is prepared to effect changes along constructive lines. The danger comes, as Sir Harry Platt implies, when the politician begins to assess the relative value of the individual doctor in terms of his remuneration. "The relation of the profession to its so-called employers then becomes one of *contract* rather than *status*." But he does not yet see in the Welfare State any obvious challenge to the corporate independence of the medical profession. He goes further in suggesting that it will be the fault of the profession if it "fails to meet the social and scientific challenge of the modern age."

Though politicians may come to measure the value of a doctor in terms of money, the doctor himself, belonging to that part of the community which tends to be ground between the upper and the nether millstone, can recognize no 40-hour week if he is to do his job and at the same time be able to make his contribution to the community as a member of the educated classes. Through the Spens Reports he was promised what seemed to be a fair deal, but whether or not he is to get it still remains unknown. This matter will no doubt soon be before the Whitley Council, and as a matter of justice alone the medical profession must see that the terms of the Spens Reports are faithfully carried out. This applies not only to those in general practice but perhaps more particularly to those working in the Public Health Service, now more than ever before the Cinderella of the medical profession. In spite of the promises that have been made about the Senior Hospital Medical Officers, it is clear that under this designation some of the Regional Hospital Boards are employing them as consultants without paying them properly for the work they do. For example, an official of a Board has admitted that "the Board has entered into a contract with practitioners who have been graded as S.H.M.O.s who, in accord with the policy of the Minister, which was agreed by the profession, would in fact have clinical charge of beds and be entitled to carry out domiciliary consultations, and accordingly they will be the colleagues of other practitioners who have agreed to enter into contract with the Board who have been classified as consultants." This policy has not been agreed by the profession; in fact it has been sharply contested. Here is something that must be stopped, and can be stopped if anyone knowing of such instances will bring them immediately to the notice of, for example, the Central Consultants Committee and the Joint Committee.

These are but a few of the things that the medical profession will have to settle with Mr. Aneurin Bevan. It must surely be his wish as well as that of the public that doctors should be able to work in an atmosphere free of resentment and discontent. And it must be obvious now that such resentment and discontent are felt by many who are much less worried about the payment they receive than what they conceive to be their altered status. The new Service seems to put a premium on the specialist in a hospital. In spite of the lip service that has been paid to the general practitioner "as the front line of defence against disease" or "as the backbone of the medical profession," the tendency is to look upon him as a filler of forms and a mechanism for sorting patients to the so-called expert. The real danger of the Health Service is that general practice is being discouraged. If this tendency continues general practitioners will eventually be converted into medical orderlies. This is something which must not happen.

FOOD AND HEALTH IN BRITAIN

In October, 1947, the Council of the British Medical Association appointed a committee of some 20 experts in the theory or practice of nutrition to examine the whole question of nutrition in this country and to prepare an authoritative report with particular reference to the adequacy or inadequacy of the wartime and post-war diet. Under the able chairmanship of Lord Horder, the committee, which had the assistance of advisers from several Government departments, including the Ministries of Food and Health and the General Register Office, have now produced a report,[1] 103 pages in length, which will certainly be ranked as one of the important contributions to the literature on nutrition. Great pains have been taken by the committee not only to collect and sift data but also to ensure that only justifiable conclusions shall be deduced from the available evidence. At its first meeting the committee appointed four subcommittees to examine different aspects of the subject. The subcommittee on nutritional requirements, with Sir Jack Drummond as its chairman, confined its attention to the nourishment of healthy individuals, having decided that the special requirements of sick or convalescent patients were outside its terms of reference. For most nutrients the subcommittee has assessed individual needs closely in accordance with the daily allowances recommended by the National Research Council of the U.S.A.; a much smaller amount of vitamin C, however, has been suggested in view of the results of a recent investigation by the Medical Research Council.[2] The subcommittee also considered how many calories the diet should provide in relation to physical activity, age, and sex: girls appear to eat most at the age of 13, but boys not until 17. Although there is no evidence that fat is a physiologically essential item of diet it should continue to provide 25% of the calories if the general character of the nation's food habits is to be maintained. Heavy manual workers should obtain 35% of their energy from fat in order to limit the need for bulky and unsatisfying foods.

The subcommittee on food consumption in the United Kingdom, under the chairmanship of Professor S. J. Cowell, obtained data both from estimates of the total amounts of food eaten by the population as a whole and from the results of reliable surveys of the diets of families and individuals. Information about the availability of rationed and unrationed foods and about the general character of the system of food control also proved helpful, and some remarkable tendencies in wartime and post-war food supplies were revealed. Liquid milk sold off the farm increased between 1939 and 1946 by 50%. In recent years, in spite of apparent severe shortages, the population has consumed 87% of the number of eggs sold before the war and up to 85% of former meat supplies. Consumption of vegetables has increased by 18%, excluding those grown for home use in gardens and allotments. The total amounts of protein, of minerals, and of vitamins other than A and C have exceeded those consumed before the war. Even supplies of animal protein, which fell to a minimum in 1941, are now slightly greater than in 1939. The allowances suggested by the National Research Council of the U.S.A. have thus been reached for most nutrients, except for vitamin C, the figure for which was extravagantly large. Possibly the calorie intake is also somewhat lower. The change towards austerity in the nation's food habits, however, has been clearly reflected in increased consumption of potatoes and grain products, from which we now derive 42% of our total calories, as compared with 34% before the war.

Under the chairmanship of Dr. F. Avery Jones a clinical subcommittee attempted to assess the nation's health in terms of nutrition. For this purpose it considered not only vital statistics but also clinical, anthropometric, and biochemical data. The nation's health has been steadily improving for many years, and only in the early years of the war was the upward trend interrupted. The committee points out that there is little evidence to suggest that the diminished incidence of diseases in general is due to improved nutrition, but it considers that a clear relationship exists between certain complications of pregnancy and childbirth and malnutrition. The continued reduction in neonatal mortality and stillbirth rates therefore suggests that standards of nutrition have not deteriorated. On the other hand, sick leave has increased in the Metropolitan Police and among young entrants to the Post Office, while general practitioners often state that complaints of vague ill-health have recently become more frequent. The aged, especially if infirm or immobile, have undoubtedly found it difficult to prepare adequate meals for themselves. Biochemical tests, however, have generally failed to show any clear evidence of serious dietary deficiency during the last few years. At the most there have been indications of sporadic partial deficiencies of vitamins A and C. Psychological and practical aspects of nutrition were studied by a subcommittee of which Dr. D. Stewart was the chairman. According to members of the Women's Voluntary Services some housewives find difficulty in supplementing their rations with sufficient unrationed foods to provide satisfactory meals, particularly if all members of the family take all their meals at home: they complain that tinned foods require many points and are expensive, that supplies of cooking fat and milk are restricted, that sausages are difficult to obtain, and that meat and offal are often of poor quality.

[1] *Report of the Committee on Nutrition*. 1950. Published by the British Medical Association, London. Price 7s. 6d.
[2] *Lancet*, 1948, 1, 853
[3] Memorandum on Hospital Diet, 1943, and Second Memorandum on Hospital Diet, 1945, London.

The fatigue and irritations of shopping have also added to the trials of family catering. Canteen services are generally appreciated and their extension is recommended. Hospital catering urgently needs to be improved, and the recommendations published by the King Edward's Hospital Fund[3] should be more widely adopted. The school-meals scheme receives support, but it is suggested that children should be able to obtain in the holidays the extra food, particularly milk, which they receive at school.

The findings of the B.M.A. committee indicate that during the last few years the population has been consuming enough food to meet recognized nutritional requirements. The nation's food, at least on paper, seems to be little inferior in either quantity or quality to that eaten before the war. Though many may find the present diet monotonous and unattractive when compared with memories of pre-war fare or with meals eaten abroad, a proportion of the population is certainly enjoying relatively better food to-day than formerly. The committee, however, is far from satisfied with this state of affairs: though food shortages may make the present rationing system necessary for some time to come, it insists that nothing in its recommendations should be taken as implying acceptance of rationing as a permanent feature of the food supply system. Rationing should be made unnecessary by increasing food production not only in this country but throughout the world.

HAZARDS IN INDUSTRY

Just over 100 years ago injury from the newly introduced machines was common, and only slowly did the conception of protection of the worker grow. Pioneer owners began to take action, and public opinion demanded that the more backward factories should follow the example of the more progressive. Legislation followed, which it fell to the Factory Department of the Home Office to guide and enforce. The work has been well done, and as a result Great Britain has led the world in this particular field. In the Ernestine Henry Lecture, published in this and last week's issue of the *Journal*, Dr. Donald Hunter has described many of these advances in a way that would have delighted the lady in whose memory the lecture was given. Ernestine Henry was the wife of a general practitioner who spent most of his professional life in one of the industrial towns of Lancashire, and was the mother of Dr. S. A. Henry, who has contributed much to industrial medicine in this country as one of H.M. medical inspectors of factories. The protection of the worker from injury by accident has slowly developed, and accidents occurring in factories are now far fewer than those that occur outside them—both road accidents and accidents in the home exceed those that happen at work. This is an achievement which has been made possible by the vigilance and combined efforts of factory inspectors, management, safety officers, and workers.

An equally spectacular advance has been the control of industrial disease. It is just over 50 years since Thomas Legge was appointed the first medical inspector of factories. Legge was a man of wide interests who had spent a considerable time in Europe, where he took the opportunity of studying public health methods at first hand. He was a successful pioneer, and the dramatic reduction in the incidence of industrial disease in this country will remain a monument to his success. The axioms he enunciated many years ago still hold good to-day and should guide those who have to deal with the toxicological problems that are constantly arising in industry as a result of the introduction of new substances. The prevention of lung disease caused by dust continues to present many difficulties, for, while silicosis is now a comparatively rare disease, unfortunately this cannot be said of the pneumoconiosis of coal-miners seen in certain parts of the country. Preventive measures are being rapidly developed, but the conditions of work and the legacy of the past make it certain that cases of this distressing condition will continue to occur for some time. The prevention of this disease, and of all occupational disease, depends upon the close co-operation of the doctor with many experts—particularly engineers, chemists, and physicists. The control of radiation hazards provides an excellent example of the need for team-work in this branch of medicine. In the new industries which have to face this hazard the combined efforts of the "health physicist," the engineer, and the doctor have so far been effective. Safety depends on accurate knowledge and wise planning, and the success which the health team has had in the atomic plants is evidence of the way a most dangerous process may be rendered safe.

Dr. Hunter draws attention to a danger which is likely to be acute during the coming months. The use of certain modern insecticides carries with it a gross danger to the worker who handles these substances. The manufacture and packing of these chemicals are usually carried out in factories where it is possible to install adequate safety equipment, but it is the users of them who are in greater danger, for warnings given by manufacturers are apt to be ignored. Dinitro-*ortho*-cresol (DNOC) has caused at least five deaths in Great Britain, and similar catastrophes have been reported from all over the world. Other new and dangerous insecticides such as parathion contain organic compounds of phosphorus. These are very deadly to man and are readily absorbed through the skin, respiratory

tract, or alimentary canal. This property makes protection difficult, and the strictest precautions, including protective clothing and respirators, are necessary. It may not always be easy to ensure the co-operation of the agricultural worker, though the rapid changes in the agricultural industry brought about by mechanization and the wider use of dangerous materials should make the countryman aware of the new dangers he must face in a modern world. The important thing to remember about parathion poisoning is that atropine is a life-saving remedy.

The protection of the worker from the particular hazards of his occupation is an important medical activity. Though the numbers of cases of industrial disease may appear small, the fear of such disease may well affect very large numbers of people, and the removal of this anxiety in the working group is at least as important as the prevention of the cases of declared disease. But modern industry brings other health problems which by reason of their almost universal nature are of the greatest importance to the health of those who live and work in an industrial community. How far, for instance, are frustration and absence of satisfaction in work responsible for departures from health in mass-production factories? And how far is the *tempo* of work to-day responsible for stress diseases among senior executives and those carrying responsibility? Research into these problems is more difficult than the investigation and control of a toxic hazard, but it is required both for the efficiency of industry and for the health of those who work in it.

DOCTORS IN PARLIAMENT

For readers of this *Journal* one of the most interesting results of the recent election is the success of the Secretary of the B.M.A., Dr. Charles Hill, in being chosen to represent the constituency of Luton as a United Liberal and Conservative Member. It should perhaps be made clear that Dr. Hill stood as a private citizen with the full knowledge and consent of the Council of the B.M.A.

In the General Election of 1945 out of the 37 doctors who stood as candidates 13 were elected. Among these were 9 Socialists, 2 Conservatives, 1 Liberal National, and 1 Independent National. Of these 13 doctors in the old House of Commons 4 did not contest the recent election: Sir Ernest Graham-Little, who for many years represented the University of London; Dr. L. Haden Guest, who has been elevated to the House of Lords as Baron Haden-Guest of Saling; Sir Henry Morris-Jones; and Dr. L. Comyns. Among those who have failed to get back into the House of Commons are Dr. S. Segal and Dr. Stephen Taylor (Labour) and Sir Basil Neven-Spence (Conservative). In the present election 32 doctors put themselves forward and 10 of them were successful in persuading the electorate to return them as Members of Parliament. Of the 32, 11 were Labour candidates and 6 have been returned; 12 were Conservatives and supporters and 4 have been returned; all 7 Liberal doctors failed to get a seat, as did the Scottish Nationalist and the Communist. Among the successful medical M.P.s Dr. H. B. Morgan (Labour) is a member of the Council of the B.M.A.

SYNTHETIC THYROXINE

Thyroxine was synthesized by Harington and Barger[1] as long ago as 1927, and in an appendix to their paper Murray Lyon showed that the synthetic product, when injected intravenously, was fully active in the treatment of myxoedema. Nevertheless it has hitherto proved no rival to the ordinary dried thyroid gland, though current methods of standardizing this preparation have often been called in question. One reason has been the high price of the drug, whether obtained from natural sources or by the complex process of synthesis described by Harington and Barger. Another, as Means[2] pointed out, is that pure thyroxine has had no advantage over dried thyroid and, indeed, was inferior to it when given by mouth, for the hormone in dried thyroid exists in the soluble and readily assimilated form of iodothyroglobulin, whereas thyroxine was less soluble and often poorly absorbed from the alimentary tract. These objections now appear to have been met. Hems and his colleagues[3,4] have described a new method for the synthesis of thyroxine which is simpler than those previously used and which will probably allow the drug to be marketed at a price comparing favourably with that of dried thyroid. In this number of the *Journal* Dr. F. Dudley Hart and Professor N. F. Maclagan report on the use in myxoedema of various thyroxine compounds prepared by this new process. They have found that the monosodium salt of L-thyroxine is fully effective when given orally in doses of 0.15–0.3 mg. daily. Their observations appear to show that it is absorbed as readily from the alimentary tract as the hormone in dried thyroid. This paper suggests that the familiar process of a pure chemical substance supplanting an impure biological product as a therapeutic agent is to be repeated, and that the debt of the practising physician to the research chemist is once again to be increased.

THE SCHOOL DENTAL SERVICE

The Lancashire Education Committee, it is reported,[5] has approved a proposal to pay school dentists a bonus of £200 a year as a means of meeting the shortage caused by the drift towards private practice. The Committee had previously rejected a suggestion that the school dentists should be permitted to help private dentists in their spare time. The plight of the school dental service again demonstrates how difficult it is to define in figures the value of preventive medical or dental work. Before the war many education authorities were able to offer dental inspection and treatment to every school child at least once a year.

[1] *Biochem. J.* 1927, **21**, 181.
[2] *J. Amer. med. Ass.*, 1935, **105**, 24.
[3] *J. chem. Soc.*, 1949, Suppl., 1, 199.
[4] Ibid., 1949, 3424.
[5] *Manchester Guardian*, February 21, 1950.

and this without troubling the parents, except to obtain their formal consent. There is little doubt that children's health will suffer because the N.H.S. Act has made it so much easier for dentists to earn a satisfactory living in ordinary practice than in school dental work, and that many school-children of to-day will in later life regret that their teeth were neglected during childhood. It seems ridiculous that the work of many dentists in ten years' time will have to be taken up with the treatment of teeth which would never have been allowed to become carious if an efficient school dental service had been maintained.

CEREBRAL ANGIOGRAPHY

Radiological demonstration of the cerebral arteries by injection of thorium dioxide into the internal carotid artery in the neck was introduced by Moniz[1] in 1927. Since then there have been improvements in technique and evaluation of results. Lindgren[2] in Stockholm devised a method of percutaneous injection, and in some clinics this method has largely replaced operative exposure of the artery and direct injection: workers at the Maida Vale Hospital for Nervous Diseases have recently described the results obtained in 70 consecutive cases with a modification of this technique.[3] They emphasize that it is essentially a procedure in which team-work is necessary. The majority of the injections were made into the internal carotid artery, but if it is thought necessary to demonstrate the external carotid the common carotid artery may be injected lower down in the neck. Separate injections of the contrast medium (diodone) were made for the lateral and antero-posterior radiographs, though the needle was kept in the artery between the two injections. Pictures were taken 2, 3.25, and 4.5 seconds after the beginning of the injection so as to obtain an arteriogram and an early and late phlebogram. Good filling was obtained in 66 cases, though in 13 of these more than one attempt was needed before a satisfactory angiogram was obtained. A burning pain is felt behind the eye as the contrast medium is injected, and there is usually flushing of the face and dilatation of the ipsilateral pupil. Complications were rare in this series of cases; in two there was a haematoma at the site of injection, in one a cervical sympathetic palsy which lasted for four weeks, in one urticaria presumably due to sensitivity to uriodone, and one patient with a cerebral angioma developed weakness of the right hand two days after angiography. Curtis[4] has described an elaboration of the technique which he calls "rapid serial angiography." Two exposures a second are taken on a length of *x*-ray film, and these are continued for 10–11 seconds after injection so that a complete study can be made of the cerebral circulation in the distribution of the artery injected. This method is of obvious value for detailed study of the cerebral circulation, and Curtis was able to demonstrate a case of a capillary or small cavernous angioma which might not have been recognized by the ordinary methods. But the apparatus required and the radiological technique are complex, and at present this method would seem to be outside the scope of routine work.

When cerebral angiography was first employed it was used principally in the study of intracranial aneurysms and angiomatous malformations, and it proved of great value in the development of methods of treating such vascular abnormalities by surgery. More recently the value of angiography in the exact diagnosis of cerebral tumours has been recognized. It is an important adjunct to clinical investigation, plain radiology, electroencephalography, and pneumoencephalography, and in some cases of supratentorial neoplasms it may provide more useful information than the latter. Visual demonstration of the cerebral arteries and veins may give two types of information about a cerebral tumour: displacement of the blood vessels from their normal positions may show the position of the tumour, and information about its pathological nature may be disclosed on occasion by special features of the angiogram such as the "blushing" which is seen in some cases of meningioma, or the characteristic appearance of new blood vessels in some cases of glioblastoma multiforme.

[1] *Diagnostic des tumeures Cérébrales et Epreuve de l'Encephalographie Artérielle*, 1931, Paris.
[2] *Brit. J. Radiol.*, 1947, n.s., **20**, 326.
[3] Wilkinson, M., Stanton, J. B., Jones, D. P., and Spalding, J. M. K., *J. Neurol. Neurosurg. Psychiat.*, 1949, **12**, 183.
[4] Ibid., 1949, **12**, 167.

ENTAMOEBA HISTOLYTICA IN RATS

Natural infection of rats with *Entamoeba histolytica* has been reported from the U.S.A.,[1 2] Dutch East Indies,[3] U.S.S.R.,[4] and Iraq,[5] and Neal's[6] discovery of *E. histolytica* in wild rats in London adds England to this list. Most of the observers realized that these findings had a bearing on the epidemiology of human amoebiasis, but, in view of the incompleteness of the description of the amoeba given by some of the earlier authors and their own doubts regarding its complete identity with *E. histolytica*, their conclusions, when not wholly rejected, were received with caution by a number of competent critics. However, in at least two cases[4 6] the identity of the amoeba found in rats was established beyond doubt; the detailed account given by Neal[6] is especially convincing. This observer found an amoebic infection in seven wild rats caught in London. Both the active and cystic forms of the amoeba were carefully studied and proved to be indistinguishable from *E. histolytica*. Moreover, its cultural forms were infective to other rats, and the experimental infection in these animals responded to treatment with emetine. The susceptibility of rats to experimental infection with *E. histolytica* is now beyond dispute, and these animals are widely employed for the study of the amoebicidal properties of drugs.[7 8] In infected rats the amoebae live in the caecum either as harmless commensals, feeding on bacteria and forming cysts, or they invade the intestinal wall, producing typical lesions and ingesting red blood corpuscles. The course of infection in rats thus shows the same variation as in man, though ulceration of the intestinal wall is not extensive and symptoms of dysentery do not develop.

[1] Lynch, K. M., *J. Amer. med. Ass.*, 1915, **65**, 2232.
[2] Chiang, S. F., *Proc. nat. Acad. Sci., Wash.*, 1925, **11**, 239.
[3] Brug, S. L., *Geneesk. Tijdschr. Nederl.-Ind.*, 1919, **59**, 1.
[4] Epstein, G. W., and Awakian, A., *Trans. R. Soc. trop. Med. Hyg.*, 1937, **31**, 87
[5] Senekji, H. A., ibid., 1940, **33**, 655.
[6] Neal, R. A., *J. Hyg.*, 1948, **46**, 90.
[7] Jones, W. R., *Ann. trop. Med. Parasit.*, 1946, **40**, 130.
[8] Goodwin, L. G., *et al.*, *Brit. J. Pharmacol.*, 1948, **3**, 44.

Both in Moscow[4] and in London[5] the infected wild rats were associated with cases of human amoebiasis. In London they were captured in a house among the inhabitants of which were two Cypriots passing abundant cysts of *E. histolytica* in their stools. Moreover, it was found that there was no trap between the sewers and the drainage system; therefore rats were able to gain access to the house. From observations on spontaneous and experimental infections in rats it is evident that they may readily acquire an infection from human carriers of *E. histolytica*, and it is conceivable that in suitable conditions these rodents could disseminate cysts and thus be of some epidemiological importance in the transmission of amoebiasis to man. In addition to the direct methods of dissemination of amoebiasis (for instance, by water) the infection is readily spread by house flies and possibly by cockroaches, but little is known about the epidemiological role of mammals. It is possible, however, that in some parts of Asia macaque monkeys, which are commonly infected with *E. histolytica*, may act as reservoir hosts. Rats are somewhat different, for—unlike the monkeys, which do not necessarily come in contact with human beings—these rodents are household pests closely associated with man. It is therefore more likely that the rat is not a true reservoir host but rather an incidental host which itself acquires the amoebic infection from human sources. This, however, awaits confirmation.

INFLUENZA B

Practitioners in many parts of the country have been encountering illnesses resembling influenza. Localized outbreaks in schools, both in southern England and further north, have been in the news. One school in Sussex has had to close. Are these outbreaks due to virus influenza? The answer is yes: influenza B is about. But it is unlikely that a late but extensive epidemic is beginning, because in Britain virus B usually does the sort of thing we are now witnessing, though there have in the past been some widespread epidemics due to B in the U.S.A. It tends to cause localized outbreaks in schools and other closed communities, and these may afflict a high percentage of those at risk. But rather special conditions appear to be necessary before an epidemic caused by virus B becomes widespread. There will probably be a small peak in the curve of deaths notified as influenzal in the great towns—virus B, like its cousin A, can help to give a *coup de grâce* to the aged and infirm. As we mentioned in a recent leading article,[1] some virus A influenza occurred last year in this country and, with much greater intensity, in continental Western Europe, and therefore not much was to be expected this year. In fact the World Influenza Centre, now at Mill Hill, has, we learn, no news of much influenza abroad except in Japan; reports indicate that this, too, may be due to virus B. All the same, influenza has a habit of confounding the prophets, and it is well to keep a watchful eye on its doings. Practitioners who meet with definite outbreaks can help by getting in touch with their nearest public health laboratory with a view to obtaining laboratory confirmation of the nature of the infection. For isolated cases such investigation is not indicated.

[1] *British Medical Journal*, 1950, 1, 291.

BIRTH WEIGHT AND DEVELOPMENT

The relation between birth weight and subsequent development has been the subject of two recent studies. Asher and Fraser Roberts[1] compared the birth weights of children attending primary, secondary grammar, and secondary modern schools with the birth weights of mentally defective children and of children at special schools. They found that in the normal population there can be no appreciable correlation between birth weight and intelligence. There was no difference in the proportion of children with very low birth weights attending the two types of secondary schools. The proportions of children with either very large (over 10.75 lb. = 4.9 kg.) or very small birth weights (2.75 lb. = 1.25 kg. in the case of girls and 3.25 lb. = 1.5 kg. in the case of boys) were three and four times greater respectively among special-school children and mental defectives than among normal children. The excess of low birth weights was a little greater amongst idiots and imbeciles than it was among the feeble-minded and borderline defectives. Since the defective and special-school children are relatively small in number compared with the normal children, the likelihood is that not more than 10% of children with the lowest birth weights will be mentally defective or very backward.

Professor R. S. Illingworth has been studying the relation of weight at birth to subsequent growth and has recently published in this *Journal* the results of an investigation of 1,343 children born between 1941 and 1945.[2] These children were divided into four groups according to weight at birth—under 5½ lb. (2.5 kg.), 7 lb. 2 oz. to 7 lb. 6 oz. (3.2–3.3 kg.), 8 lb. 8 oz. to 9 lb. 7 oz. (3.8–4.3 kg.), and over 9½ lb. (4.3 kg.)—and their growth in weight up to the age of three years was compared. Body weight during infancy appears to be a function of birth weight, and the four groups displayed a gradation of mean weights during the first three years of life similar to that at birth. The light weights at birth do not catch up with the heavy weights. The average male or female child who weighed 9½ lb. or more at birth weighed more at two years than the child whose birth weight was 5½ lb. or less did at three years. This study makes it obvious that a weight for age standard is not suitable for assessing the growth of young children and that it is necessary to relate growth curves to the birth weight as well as to age.

The Harveian Lecture of the Harveian Society of London on "Harvey and the Scientific Method" will be delivered by Sir Henry Cohen, professor of medicine in the University of Liverpool and President-Elect of the British Medical Association, at 26, Portland Place, London, W., on Wednesday, March 22, at 8.45 p.m. All members of the medical profession are invited to attend the lecture.

We announce with much regret the death on February 27 of Professor J. A. Ryle. Professor Ryle succeeded Sir Walter Langdon-Brown as Regius Professor in the University of Cambridge in 1935, and in 1943 was appointed Nuffield Professor of Social Medicine at Oxford.

[1] *Brit. J. soc. Med.*, 1949, 3, 56.
[2] *British Medical Journal*, 1950, 1, 96.

REFRESHER COURSE FOR GENERAL PRACTITIONERS

FRACTURE OF THE CARPAL SCAPHOID

BY

G. PERKINS, M.A., M.Ch., F.R.C.S.

Orthopaedic Surgeon, St. Thomas's Hospital

A fracture of the scaphoid is of special interest to the general practitioner for many reasons : it is the commonest injury to befall the wrist of a working man ; the local trauma is so mild as to induce the sufferer to consult his own doctor rather than to report to a hospital ; it is easily overlooked ; treatment is within the capacity of any practitioner who is able to put on a plaster ; and if not treated properly it may cause severe and permanent disability.

Any accident that imposes violent dorsiflexion on the wrist is apt to fracture the scaphoid. It is worth while inquiring into the reason for this in order to understand the rationale of treatment. Motion at the wrist is shared by the radio-carpal joint and the joint between the proximal and distal row of carpal bones (the intercarpal joint). The scaphoid is part of both rows of carpal bones, and when the intercarpal joint is dorsiflexed the distal end of the scaphoid can conform to the movement of the other bones of the distal row only by rotating. The scaphoid willy-nilly opposes dorsiflexion, and when the intercarpal joint is excessively dorsiflexed the scaphoid breaks. For practical purposes it may be assumed that the fracture line has always the same position and the same direction : it runs transversely across the middle of the bone, at right-angles to its long axis.

Diagnosis

Signs of local trauma are minimal. Although movement at the wrist is painful and restricted there may be little if any swelling, and the first diagnosis to suggest itself is a sprain of the wrist. This diagnosis should never be accepted unless clear radiographs show unmistakably the absence of any fracture. The first step on the road to diagnosis is the awareness that, of all injuries of the wrist in a working man, a fracture of the scaphoid is the most likely.

When the fracture is suspected the scaphoid should be palpated for local tenderness. The bone can be felt in front of the wrist, but it is easier to find on the dorsum ; it lies in the floor of the anatomical snuff-box, just distal to the lower end of the radius.

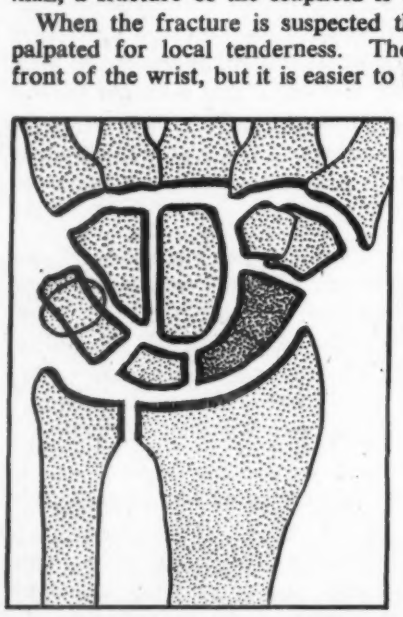


FIG. 1.—The fracture may appear on the radiograph as no more than a linear crack.

The diagnosis is confirmed by radiographs. But here again are pitfalls. The fracture line may not be seen unless three views are taken—an antero-posterior, a lateral, and an oblique—and often the fracture is represented only by a linear crack, without any displacement (Fig. 1). Even experts may be in doubt whether a fracture is present. In such cases it is justifiable to treat the injury as a sprain, provided that another radiograph is taken ten days later. A fracture will have become obvious by then, since the opposing raw surfaces undergo rarefaction.

Treatment

Most fractures in the body will unite without splintage, and often the sole purpose of a splint is to preserve alignment. The scaphoid is an exception, because, no muscles being attached to either fragment, the two ends cannot be held immobile except by external splintage ; and unless the two ends are held immobile they do not join. During dorsiflexion of the wrist the scaphoid rotates, and if the bone is fractured any movement of dorsiflexion shifts the distal fragment on the proximal. In order to immobilize the two ends this movement must be eliminated. Any splint closely applied to the front and back of the forearm and hand would abolish movement at the intercarpal joint, but to prevent the splint from slipping up and down it should be bent and applied with the wrist in slight dorsiflexion. This has the additional advantage of being the natural position in which a person fixes his wrist when using his fingers. The purpose of the splint is to prevent movement at the intercarpal joint, and therefore it must be applied as closely as possible to the back and front of the hand. The plaster should be skin-tight—that is, there should not be any wool under the plaster, though a layer of stockinet is allowable and advisable for the sake of comfort—and the lower edges of the plaster should be squeezed together while it is setting (Fig. 2).

FIG. 2.—Illustrating the method of squeezing the lower edges of the plaster while it is setting.

The efficacy of the plaster can be tested by seeing how much antero-posterior play the metacarpals have. The hand should be used throughout the period of fixation, because repair is thereby hastened. The lower edge of the plaster should not therefore extend beyond the proximal of the two transverse creases in the palm, and the thumb should be held separated from the index finger and at right-angles to the palm (Figs. 3 and 4). This is the position of function ; it enables a person to use his thumb and forefinger as pincers.

The palmar portion of the plaster soon gets soft and papery. The plaster is then no longer efficient and might just as well not be there. It needs to be inspected frequently so that it can be reinforced before the hand gets any antero-posterior play.

It is my belief that the fractured surfaces are rarely displaced and that reduction is therefore seldom called for. Nevertheless, the plaster is best applied under general anaesthesia, since accurate moulding may otherwise be prevented by tenderness. The plaster should not be uncomfortable : if it is, something is wrong. A patient who uses his hand vigorously may rub the skin over the head of the ulna during rotation of the forearm, and this can be anticipated by cutting a small window in the plaster at this site.

FIG. 3.

FIGS. 3 and 4.—Note that the plaster does not extend beyond the proximal transverse palmar crease, and the position of the thumb.

FIG. 4.

Duration of Plaster Fixation

A transverse fracture of the upper limb takes six weeks to unite and twelve weeks to consolidate. For six weeks therefore the intercarpal joint must be prevented from moving, and only gentle movement allowed for another six weeks. In practice it is advisable to retain a complete plaster for six weeks and then to replace it with a removable plaster holding the wrist in the same position. So long as the fingers and thumb have been used throughout the period of fixation the wrist will move through half its range as soon as it is freed from fixation, and thereafter full movements gradually return with ordinary use. Physiotherapy is rarely required.

Old Fracture of the Scaphoid

There is a clear-cut distinction between delayed union and non-union. Delayed union implies that the fragments will unite if they are held in apposition and immobile for a longer period of time. Non-union means that no matter how long the two ends are held splinted they will not unite until something more is done. Since delayed union and non-union call for different treatments it is essential to place each case in the right category.

A fracture of the scaphoid is often missed either because the injury seems too trivial for the patient to seek advice or because the doctor overlooks the possibility of a fracture, and the diagnosis is not made for perhaps some months after the injury. The doctor then has to decide whether he is dealing with delayed union or with non-union. The decision is made on radiographic evidence. In a delayed union the fracture line is vacuolated (Fig. 5); in non-union the fractured ends are separated by a space and are covered in with sclerosed bone (Fig. 6).

A fracture with delayed union should be treated like a recent fracture, except that the period of fixation may need to be doubled. If at the end of six months the fracture has not united, splintage should be discarded and the fracture treated as one of non-union. A fracture with non-union will not unite unless the sclerosed bone sealing the two ends is removed. This can be done only at an open operation, and is a procedure beyond the scope of a general practitioner. Indeed, the results of operative intervention are so poor that it is questionable whether any operation designed to promote union is worth doing—especially when it is known that many people have negotiated life successfully with an ununited scaphoid, sometimes even engaging in heavy manual work.

This adds another complication, for not infrequently after a recent injury the radiograph reveals an old fracture of the scaphoid and yet the patient denies ever having injured the wrist. The doctor needs to be on his guard lest he treats such a patient as suffering from a recent fracture. The radiographs clearly demonstrate that the fracture is old, for there is a gap between the fragments and the ends are sclerosed (Fig. 6), whereas a recent fracture shows a linear crack through a bone of normal architecture (Fig. 1). When a wrist containing an old fractured scaphoid sustains an injury it should be treated as a sprain, without any splintage and with early physiotherapy.

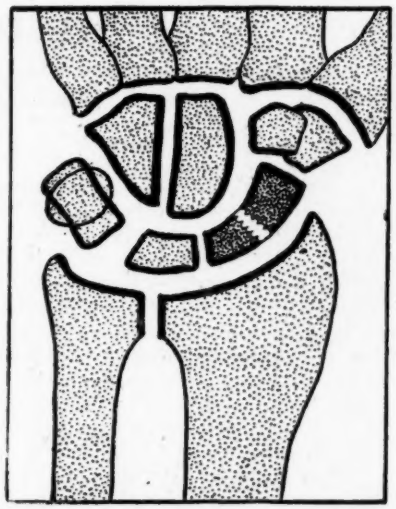


FIG. 5.—The fracture line in delayed union.

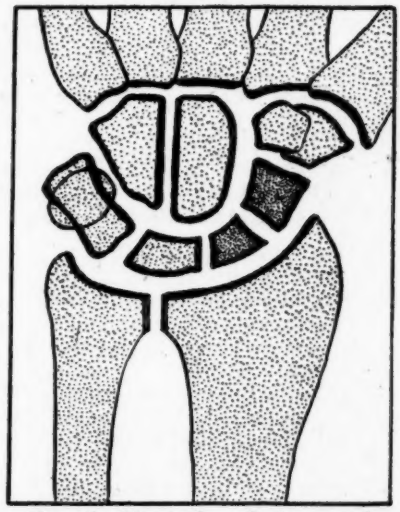


FIG. 6.—Non-union of the carpal scaphoid.

Non-union, as has been said, is not incompatible with a useful wrist. It may, however, be associated with so much pain on movement that the hand is for practical purposes useless. This is especially the case when the non-union has been the sequel to an aseptic necrosis of the proximal half of the bone—a not uncommon complication. A permanent cock-up splint may immobilize the wrist enough to enable the patient to use his fingers without pain, but usually he is not satisfied until the radiocarpal and intercarpal joints have been fused. This is a task for a surgeon; indeed the general practitioner would be wise to hand over all cases of delayed union and non-union, although the treatment of a recent fracture of the scaphoid is well within his province.

Dr. Glenn T. Seaborg and his colleagues at the University of California have produced a new element, the 97th, which has been given the provisional name of berkelium. It was obtained by bombarding another recently discovered element, americum, with alpha particles from the cyclotron. This is the fifth new element to be discovered since 1940.

MEDICAL MEMBERS OF PARLIAMENT

The following brief biographies relate to members of the medical profession who were successful at the General Election held on February 23. In each case the detailed polling figures are appended.

Dr. R. F. B. Bennett

Dr. R. F. B. Bennett (Conservative, Gosport and Fareham) is 38 and was educated at Winchester, New College, Oxford, and St. George's Hospital, London. He qualified in 1937, and graduated B.M., B.Ch. in 1942. Before qualifying he was a junior demonstrator in anatomy at Oxford University, and in his last two years at St. George's he was editor of the *Hospital Gazette*. During the war he served in the R.N.V.R. with the rank of surgeon lieutenant-commander in H.M.S. *Cheshire* in the Western Approaches. He had the unenviable experience of being torpedoed in this vessel and later in H.M.S. *Springbank*. Subsequently he served with the Fleet Air Arm, and in Tanganyika and Ceylon completed more than 500 hours' flying as a pilot. Towards the end of the war he was attached to the R.N. Psychiatric Hospital at Knowle. After demobilization he was psychiatric registrar at St. Ebba's Hospital, Epsom, and more recently at the Maudsley Hospital. He is at present a psychiatrist for South Hampshire, working for the most part from Knowle Hospital. Dr. Bennett fought the L.C.C. elections as a Conservative in East Woolwich in 1937, and he also contested the East Woolwich constituency in the 1945 election. His chief hobby is sailing, and he was for two seasons helmsman of *Shamrock V*. He founded the Winchester College Sailing Club and led the Oxford Club against Cambridge. He represented England in the 1936 Olympic Games and was also in the British team which sailed against the Americans in 1949. He was married in 1947 and has one daughter.

Dr. R. F. B. BENNETT (Conservative)	29,163
A. R. Nobes (Lab.)	18,579
E. W. Borrow (L.)	3,531

Dr. A. D. D. Broughton

Dr. A. D. D. Broughton (Labour, Batley and Morley) was born on October 18, 1902. He comes from a medical family, being the son of the late Dr. A. G. S. Broughton, J.P., and a grandson of the late Dr. A. W. Broughton. Educated at Rossall School, Cambridge University, and the London Hospital, he qualified in 1929 and graduated M.B., B.Ch. in 1937. After postgraduate studies at Leeds University he took the D.P.M. in 1936 and the D.P.H. a year later. Married in 1930 to Dorothy, the daughter of the late Commander W. D. Parry Jones, he has a son and a daughter. Dr. Broughton held appointments as casualty officer at Poplar Hospital and as receiving-room officer at the London Hospital before returning to Rossall School for a few years as resident medical officer. He entered general practice in Batley in 1932, served on the honorary staff of Batley and District General Hospital, and took a keen interest in ambulance work. He is an honorary life member of the St. John Ambulance Association and a serving brother of the Order of St. John of Jerusalem. During the last war he served for five years in the Medical Branch of the Royal Air Force, being promoted squadron-leader in 1941. A member of the British Medical Association since qualifying, he is an ex-chairman of the Dewsbury Division. Dr. Broughton was elected a member of the Batley Borough Council in 1946 and held office as the vice-chairman of the public health and of the maternity and child welfare committees. He took his seat in Parliament in February, 1949, after winning the Batley and Morley by-election. He did not stand for Parliament in 1945.

Dr. A. D. D. BROUGHTON (Labour)	29,776
Mrs. W. C. G. Bremner (C.)	19,891

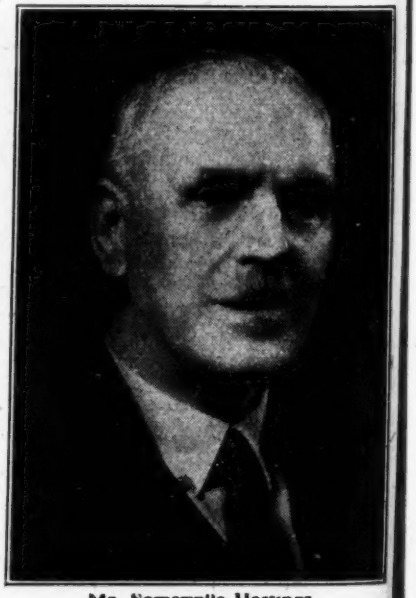
Mr. Walter Elliot

Mr. Walter Elliot (Conservative, Kelvingrove) was educated at Glasgow Academy and the University of Glasgow. He took the B.Sc. in 1910, graduated M.B., Ch.B. in 1913, and proceeded D.Sc. in 1923. The honorary degree of LL.D. has been conferred on him by the Universities of Aberdeen, Edinburgh, and Glasgow, and of Leeds and Manchester, and he is an honorary D.Sc. of the University of South Africa. From 1933 to 1936 he was Lord Rector of Aberdeen University; he is at present Rector of Glasgow University. He is a freeman of the City of Edinburgh, of the Royal Borough of Lanark, and of Hawick. Mr. Elliot was elected F.R.S. in 1935 and F.R.C.P. in 1940. During the war of 1914–18 he served with the R.A.M.C., attached to the Royal Scots Greys, and was awarded the Military Cross and bar. Mr. Elliot was returned to Parliament as Member for the Lanark division in 1918 and again in 1923, and he was Member for the Kelvingrove division of Glasgow from 1924 until the General Election of 1945, when he lost his seat by 88 votes to the Socialist candidate. In 1946 he was returned to Westminster by the Scottish Universities after a spectacular contest in which all his opponents lost their deposits. The Representation of the People Act of 1948 abolished the university vote, and Mr. Elliot has therefore returned to the Kelvingrove division of Glasgow. Mr. Elliot became a Privy Councillor in 1932, and from 1923 onwards he held in succession the offices of Under-Secretary of Health for Scotland, Under-Secretary of State for Scotland, Financial Secretary to the Treasury, Minister of Agriculture and Fisheries, Secretary of State for Scotland, and Minister of Health. In 1941–2 he was Director of Public Relations at the War Office. He is well known to the public through his writings and his broadcasting.

Mr. WALTER ELLIOT (Conservative)	15,197
J. L. Williams (Lab.)	13,973
S. J. Ranger (L.)	831
C. M. Grieve (Ind. Sc. Nat.)	639

Mr. Somerville Hastings

Mr. Somerville Hastings (Labour, Barking) is consulting aural surgeon to the Middlesex Hospital. For many years he was surgeon to the ear, nose, and throat department at the Middlesex Hospital and lecturer, but he retired from practice in 1945 when he was again returned to Parliament. A student at Middlesex Hospital and University College, London, he graduated M.B., B.S. in 1902 and took the F.R.C.S. in 1904. While in practice he was an active member of the Royal Society of Medicine, and was president of the Otological Section some years ago. Mr. Hastings has been interested in medical politics for many years. He was a member of the B.M.A. Planning Commission, and assisted in the formation of the Socialist Medical Association in 1929. He became president of the S.M.A. then and has continued in that office ever since. He is also a member of the public health advisory committee of the Labour Party. He was returned as Labour M.P. for Reading in 1923, winning the seat for the first time for Labour, and again in 1929, and held a minor post in the first Labour Government, being Parliamentary Private Secretary to the Board of Education. Mr. Hastings has been a



Mr. Somerville Hastings

Dr. R. F. B. Bennett

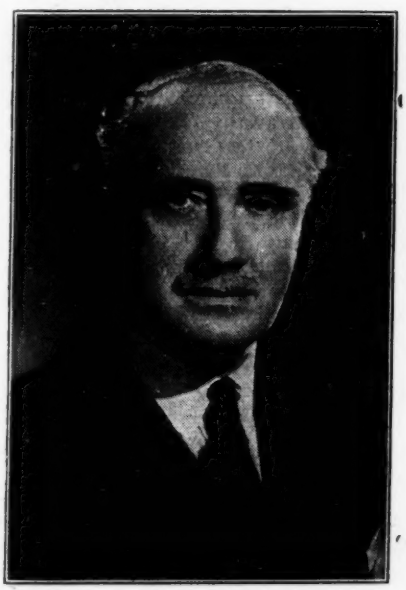
Dr. A. D. D. Broughton

Mr. Walter Elliot

Dr. Charles Hill

Dr. S. W. Jeger

Dr. H. B. Morgan



Colonel Malcolm Stoddart-Scott

Dr. Barnet Stross

Dr. Edith Summerskill

member of the London County Council since 1932, and he became chairman of the hospitals and medical services committee of the council in 1934, holding this post for ten years until he became chairman of the council itself. He is much interested in the needs and care of children, was a member of the Curtis Committee, and is now vice-chairman of the children's committee of the London County Council. He is at present an alderman of the council. He served as a captain in the R.A.M.C. during the 1914–18 war and was associated with the Emergency Medical Service during the 1939–45 war. At present, at the age of 71, he is chairman of the board of governors of the Hammersmith, West London, and St. Mark's Teaching Hospitals, a member of the board of governors of the Middlesex Hospital, and of the North-east Metropolitan Regional Hospital Board. Mr. Somerville Hastings was returned in 1945 as the Member for Barking with a majority of 18,911.

Mr. SOMERVILLE HASTINGS (Labour)	30,299
K. E. B. Glenny (C.)	10,269
C. H. Willcock (L.)	5,109

Dr. Charles Hill

Dr. Charles Hill (Liberal-Conservative, Luton), Secretary of the British Medical Association, was born on January 15, 1904, and educated at St. Olave's School, Trinity College, Cambridge, and the London Hospital. After taking his B.A. at Cambridge with first-class honours in the Natural Sciences Tripos in 1925, he took the M.R.C.S., L.R.C.P. in 1927, and graduated M.B., Ch.B. in 1929, proceeding M.D. in 1936. For a time he was a London University extension lecturer, and then spent two years as deputy medical officer of health for Oxford before coming to the B.M.A. as assistant secretary in 1932. Three years later he was made deputy secretary, and in 1944, on the death of Dr. G. C. Anderson, he became secretary. He is a member of the Industrial Health Advisory Committee, Ministry of Labour. Dr. Hill is secretary of the Commonwealth Medical Conference, recently established to strengthen the ties of Commonwealth. He has also been active in the affairs of the World Medical Association, of which body he is at the moment president. Popular education in the simple rules of health and hygiene is another of his interests. He was formerly chairman, and is now vice-president, of the Central Council for Health Education. He has broadcast regularly for the B.B.C. under the pseudonym of "Radio Doctor," and is the author of several books on health education. Dr. Hill is married, has five children, and lives at Harpenden. He has stood for Parliament on one previous occasion, at the General Election of 1945, when he contested the since abolished Cambridge University constituency as an Independent candidate.

Dr. CHARLES HILL (Liberal-Conservative)	22,946
W. N. Warbey (Lab.)	21,860
W. G. Matthews (L.)	4,447

Dr. S. W. Jeger

Dr. Santo Jeger (Labour, Holborn and St. Pancras South) is 51 and was educated at University College, Cardiff, and at the London and St. Mary's hospitals. He qualified in 1923 and is in general practice in London. He has taken a prominent part in local government in Shoreditch and was chairman of the public health committee there. After five years on the borough council he became mayor of Shoreditch in 1930, and he has been on the London County Council since 1931. During the Civil War in Spain Dr. Jeger made two visits to that country to advise the Republicans on medical aid work. During the 1939–45 war he was in charge of a mobile ambulance unit and first-aid post. Dr. Jeger was one of the founders of the Socialist Medical Association and he first contested St. Pancras South-east in 1935 and was elected to Parliament for that constituency in 1945. He had then a majority of 4,710.

Dr. S. W. JEGER (Labour)	19,223
P. J. F. Chapman-Walker (C.)	17,993
Miss H. Buckmaster (L.)	2,411

Dr. H. B. Morgan

Dr. H. B. Morgan (Labour, Warrington) was born in the Island of Grenada, British West Indies, in 1885. He is of Irish extraction and was a student at Glasgow University, where he had an exceptional career. He graduated M.B., Ch.B. in 1909, later taking the D.P.H. and proceeding M.D., with commendation During the 1914–18 war he served in France, and was finally surgical specialist at the Horton War Hospital. After holding many institutional posts, Dr. Morgan was in general practice from 1921–30. Since 1931 he has been physician to the Manor House Hospital. He was appointed medical adviser to the T.U. Congress and their specialist on industrial diseases in 1933 and has held many similar posts in various trade unions. He had been a Fabian since 1904, and he joined the Labour Party soon after the 1914–18 war. He was adopted as the Labour candidate for Stockton-on-Tees in 1920. The following year Dr. Morgan went to North-west Camberwell, being specially selected by the National Labour Party to break up the Liberal influence in South London. He fought unsuccessfully three general elections before being returned to Parliament in 1929 He did not stand for Parliament at the General Election of 1931. but he returned to politics again in 1939 and was adopted Parliamentary Labour candidate for Rochdale, which constituency he has represented since 1940. Dr. Morgan, who is a lifelong teetotaller and non-smoker, married in 1930 and has two daughters. He has been a member of the Council of the B.M.A. since 1940 and has served on many B.M.A. committees. He had much to do with the settlement of the Llanelly dispute in 1934, when he represented the T.U.C. in the negotiations. This settlement led to the setting up of the joint B.M.A. and T.U.C Committee. In 1945 Dr. Morgan was returned as the Member for Rochdale with a majority of 5,195.

Dr. H. B. MORGAN (Labour)	26,482
F. L. Neep (C.)	17,730
J. C. Park (L.)	1,899
J. Grady (Comm.)	496

Colonel Malcolm Stoddart-Scott

Colonel Malcolm Stoddart-Scott (Conservative, Ripon) was born at Pontefract in Yorkshire in 1901. He was educated at Elmfield College, York, Ashville College, Harrogate, and Leeds University. He took an active part in student affairs and won his hockey colours for three years in succession. He was president of the Students' Representative Council, vice-president of Leeds University Union, and twice president of the Leeds University Medical Society. He graduated M.B., Ch.B. at Leeds in 1926 and proceeded M.D. in 1929. He was on the resident staff of the General Infirmary at Leeds until 1939 as house-physician. orthopaedic house-surgeon, and resident gynaecological officer As a Territorial officer in the R.A.M.C., Colonel Stoddart-Scott was called up in August, 1939, and served as the senior medical officer of the 10th A.A. Division and as D.A.D.M.S. and A.D.M.S. 48th Division; this last appointment he held for two and a half years. He was awarded the O.B.E. in 1945 He has been honorary secretary of the Conservative Parliamentary Health Committee, and he sat on the Standing Committees which dealt with the National Health Service Bill, Analgesia in Childbirth Bill, Nurses Bill, Milk Designation Bill, and other measures. He is also chairman of the British Rheumatic Association. Colonel Stoddart-Scott was first elected to Parliament in 1945 as the Conservative Member for Pudsey and Otley (Yorkshire West Riding) with a majority of 1,651.

Colonel MALCOLM STODDART-SCOTT (Conservative)	22,292
R. W. S. Hill (Lab.)	11,317

Dr. Barnet Stross

Dr. Barnet Stross (Labour, Stoke-on-Trent Central) is 50 and was educated at Leeds Grammar School and at Leeds University Medical School. He graduated M.B., Ch.B. in 1925 and was engaged in general practice in Stoke-on-Trent until 1948. He

was appointed medical adviser to the North Staffs Miners Federation and Pottery Workers Society of Great Britain in 1927. Dr. Stross was elected councillor of the City of Stoke-on-Trent in 1937, and in the following year he stood as Parliamentary candidate for the Hanley division of Stoke-on-Trent. In 1945 he entered Parliament, representing this division, and he was also elected alderman. During the war Dr. Stross was appointed a lecturer on the National Panel by the Ministry of Food, and in 1942 he founded the "Lidice Shall Live" Organization. He was a member of the All-Party Parliamentary Delegation to Czechoslovakia in 1946, and was decorated by Mr. Jan Masaryk a year later with the Order of the Commander of the White Lion of Czechoslovakia. Dr. Stross served on the Standing Committees responsible for considering the National Health Service Bill, the Nationalization of Coal Bill, and the Criminal Justice Bill. Dr. Stross was returned as the Member for Stoke-on-Trent (Hanley) in 1945 with a majority of 11,602.

Dr. BARNET STROSS (Labour)	34,908
W. Hancock (C.)	18,361

Dr. Edith Summerskill

Dr. Edith Summerskill (Labour, Fulham West), who is 49, was born in London, and comes of a family of doctors. A student of King's College, London, and Charing Cross Hospital, she qualified in 1924. She married Dr. E. Jeffrey Samuel in 1925, and they have a son and a daughter. Dr. Summerskill's political career began when she was co-opted on to the maternity and child welfare committee of an urban district council. She served on the Middlesex County Council from 1932–8, fought a Parliamentary by-election in Putney in 1934 (reducing the majority against Labour from 22,000 to 2,000), contested Bury at the 1935 General Election, and was returned in 1938 as the Member for West Fulham. In 1945 she was again returned to the House of Commons, and was Parliamentary Secretary at the Ministry of Food throughout the Government's term of office. Dr. Summerskill has always been deeply interested in questions concerning women and children. She was invited by the Spanish Government to examine the condition of the women and children in Spain during the Civil War, and has examined public health conditions in a number of countries. After Dunkirk she was responsible for forming the Women's Home Defence, and in 1944 she was chosen by the Speaker of the House of Commons as the only woman to go on a Parliamentary delegation to Australia and New Zealand. In 1946 Dr. Summerskill represented Great Britain at the Food and Agriculture Organization's conference at Washington, and again in 1947 in Geneva. She was one of the organizers of the Socialist Medical Association, and is now vice-president of the association. In the 1949 New Year Honours list it was announced that Dr. Summerskill had become a Privy Councillor. She is the first married woman to have received this distinction. Dr. Summerskill was returned in 1945 as the Member for Fulham West with a majority of 7,521. At the recent election she was opposed by Dr. O'Donovan, who did not stand for Parliament in 1945 but who was the Member for the Mile End Division of Stepney from 1931 to 1935.

Dr. EDITH SUMMERSKILL (Labour)	20,141
Dr. W. J. O'Donovan (C.)	17,292
E. Walcot-Bather (L.)	1,949

Acknowledgments

The photographs of Dr. S. W. Jeger and Dr. A. D. D. Broughton are by Elliott and Fry, Ltd.; that of Colonel Malcolm Stoddart-Scott by Bassano; Mr. Walter Elliot by Davis (Streatham); Mr. Somerville Hastings by Odhams Press; Dr. H. B. Morgan by the *Daily Herald*; Dr. Edith Summerskill by London News Agency; Dr. Charles Hill by Cox (Luton); Dr. R. F. B. Bennett by Barrett; and that of Dr. Barnet Stross was taken privately.

ADEQUACY OF THE NATIONAL DIET

B.M.A. NUTRITION COMMITTEE'S REPORT

Two years ago the Council of the British Medical Association set up a Special Committee to examine the whole question of nutrition, with particular reference to the adequacy or otherwise of wartime and post-war diet. A similar committee, on which the late Sir Kaye Le Fleming was a leading figure, published a *Report on Nutrition* in 1934, which was followed by *Family Meals and Catering* in 1935 and the *Doctor's Cookery Book* in 1938. The nutritional situation has undergone such radical changes in the ensuing years, owing to food restrictions and control, the substitution of certain foods, extra allowances for sections of the population with special nutritional needs, and the vast extension of communal feeding, with other changing food habits, that a new and authoritative survey of the whole subject was demanded.

The committee was fortunate enough to secure Lord Horder as chairman, Dr. R. G. Gordon as vice-chairman, and a membership of 20 (apart from *ex officio* members), most of them medical men and women, and all of them experts in the subject. They were assisted by others who were co-opted on to subcommittees for their special knowledge, and by observers and advisers from the Ministries of Food and Health and the General Register Office. A large number of other authorities furnished useful evidence or suggestions.

The work was divided into four departments, each in charge of a subcommittee. The subcommittee on food consumption was chaired by Professor S. J. Cowell; that on nutritional requirements by Sir Jack Drummond; that on clinical assessment by Dr. F. Avery Jones, and that on the psychological and practical aspects of nutrition by Dr. D. Stewart. When the immense amount of memoranda placed before these subcommittees is recalled, a report of little more than 100 pages is a miracle of compression. It does not pretend to be a textbook on nutrition. Rather is it a survey which will give the intelligent inquirer, be he doctor, sociologist, statesman, or educator, an answer, so far as the answer is known to-day, to the questions which frequently arise on this subject. It is admitted that the available facts are in some places too meagre to yield conclusions which carry complete conviction, and that there are gaps and guesses here and there. A permanent organization might with advantage be established for the purpose of keeping a continuous check on the nutritional state of the population and investigating the many nutritional problems still unsolved.

"But the picture produced is, on the whole, not unsatisfactory in the view of the committee, bearing in mind the stress and strain of the past few years and the severe shortages in food with which the country has been faced."

Needs of the Healthy Person

The committee accepts as a basis for consideration of the needs of adults the estimates of 2,200 and 1,800 calories a day for adult males and females respectively as the amount of energy required for 24 hours of ordinary living. It dislikes the classification into "light," "heavy," and other rough-and-ready designations of physical activity, but can find no alternative. Accepting these, it takes the additional calories per hour for various grades of work from sedentary to very heavy effort as from 30 to 300, and for exceptionally heavy effort in the case of males to 450. With the small amount of data available the problem of classifying the wide diversity of industrial work and every kind of physical activity is regarded as insoluble. One factor pointed out is that the rapid extension of labour-saving devices tends progressively to reduce the average calorie expenditure of the workers affected.

On the question of fats in the diet, the committee is inclined to the view that the relatively simple type of diet enforced in in this country as a result of war and post-war restrictions has provided all that is necessary in "essential fatty acids," if in fact these are of importance in nutrition. There is ample

support for the opinion that fat ("visible" and "invisible") should provide at least 25%, rising to 35% with increasing physical effort, of the calorie value of the diet in order to maintain the general character of the food habits of our people.

The average protein requirements of groups of individuals cannot yet be assessed with certainty. It can only be said that 14% of the calories in the form of protein of a mixed diet is sufficient for pregnant and nursing women, infants, children, and adolescents, while for adults in general, not engaged on hard work, the diet should provide not less protein than an amount representing 11% of the energy allowance.

The committee reviews the mineral and vitamin requirements. Concerning vitamin C, it is unable to find any trustworthy evidence that maintenance of saturation of the blood with this vitamin is desirable in the interest of health. The large recommended allowances of 75–100 mg. daily advocated by the National Research Council (U.S.) are not, therefore, thought to be necessary. The committee believes that while 20 mg. a day or even less may be an adequate quantity for adults, 30 mg. would provide a good margin of safety.

The recommendations for daily dietary allowances are summarized in tables worked out for males and females, for different age periods up to adult life, and for various requirement classes in respect of character of work. A short extract from these tables appears below.

	Children Age 7–10	Men on Light Work	Men on Heavy Work	Women on Medium Work	Pregnancy—Second Half
Calories	2,000	2,750	3,500	2,500	2,750
Protein g.	74	80	102	73	102
Iron mg.	10·5	12·0	12·0	12·0	15·0
Calcium mg.	1·0	0·8	0·8	0·8	1·5
Vitamin A and carotene i.u.	3,000	5,000	5,000	5,000	6,000
Vitamin D i.u.	400				600
Thiamine mg.	0·8	1·1	1·4	1·0	1·1
Niacin mg.	8	11	14	10	11
Riboflavin mg.	1·2	1·6	2·1	1·5	1·6
Vitamin C mg.	20	20	20	20	40
Iodine μg.	150	100	100	100	150

The People's Food

The committee addressed itself to the question of the present food consumption of the people of the United Kingdom. The information was derived from estimates of the total amounts of food consumed by the population and from the results of family and individual surveys. The changes which have taken place in the consumption of certain individual foods are set out. The level of consumption of dairy products (excluding butter) in 1947—the latest year to which generally the statistics given in the report relate—was 30% above the pre-war level. The consumption of butter was 56% below the pre-war figure, its place being taken by margarine, the consumption of which was up by 70%. The consumption of meat in 1946–7 was 9% below pre-war level, calculated by carcass weight, of 15% calculated by edible weight, but there was greater variation between different types of meat. Mutton and lamb, for instance, were 10% above pre-war consumption, while pig meat was 83% below. Fish, poultry, and game were in 1946–7 consumed to 28% above pre-war level, and eggs were 14% below. Sugar was 26% down, and all fruit 18% down, while on the other hand vegetables increased by 8%, potatoes by 67%, and grain products by 10%.

The average intake of calories in 1946–7 was 97% of the pre-war intake. The intake of protein also increased; the increase was chiefly in vegetable protein, but animal protein in 1946–7 was 6% above the pre-war level. The most marked decrease has taken place in the fat content of the diet—15%. The figure per head for supplies of carbohydrate was slightly higher than the pre-war figure, and there was a large increase in the mineral content of the diet. The average daily intake of ascorbic acid, after falling very substantially in the early part of the war, was by 1946 almost up to pre-war level, and the average intake of vitamin A was only 5% below. In 1943 it had stood at 89%. All these figures, of course, calculated from gross supplies, must be regarded only as approximate.

Many pages of the report, with accompanying tables, are devoted to a discussion of the results afforded by food surveys, from which sometimes in the past wrong conclusions have been drawn. The complexities of this subject are illustrated by the recent controversy on whether the nation is worse fed after the war than the unemployed were before the war. Food control has brought about a great equalization of distribution of nutrients, whereas in the pre-war period the consumption of protective foods varied directly with changes in income. Milk consumption was then exceedingly low, and milk was unequally distributed. Even among well-to-do sections of the community there was a low calcium intake owing to insufficient consumption of milk, while in poorer families with several children the intake of calories was insufficient—in plain words, the families did not get enough to eat.

National Food Surveys

From the early part of the war until now the Ministry of Food, at first in co-operation with the Ministry of Health, has carried out a large-scale investigation termed the "National Food Survey." Samples of urban working-class families have been studied at the rate of 600–700 families a month, and special surveys of other groups have been made. Much of this material, in a series of tables showing weekly purchases in the households concerned and the amount of food consumed and its nutrient content, is reproduced in this report. The National Research Council (U.S.) in 1941 issued certain recommended allowances—calories, 2,550; protein, 63 g.; calcium, 900 mg.; iron, 12 mg.; vitamin A, 2,580 i.u.; ascorbic acid, 70 mg., and various amounts for the several B vitamins. From the National Food Survey it appears that in each of the years 1941 to 1947 the intakes of protein, iron, and vitamin A were above the recommended allowances, those of ascorbic acid were below, those of calcium considerably below, and those of the B vitamins below during the earlier years of the period and at or above the recommended level later. The calorie position is difficult to assess, fluctuating from year to year. In 1946 and 1947 it appeared to be at about 3% below the recommended level. But these figures in the National Food Survey do not include nutrients provided by meals outside the home, which would, of course, improve the picture, and in some cases would make all the difference between adequate and substandard nutrition.

The committee, in endeavouring to compare the levels of food consumption before and since 1939, also examined some individual food surveys, limited mainly to children and expectant mothers. These showed that the people in the groups concerned did get sufficient calories and protein during the war years, though a change in food habits was imposed—for example, increased consumption of cereals and potatoes, and less animal protein, fats, and vitamin C. All these investigations suggest that throughout the war the standard family had little difficulty in obtaining the "human needs" diet, though it was less easy in the immediate post-war years, when shortage of fats made it difficult for some adults to obtain sufficient calorie intake without considerable strain on the digestion. Trouble was due not so much to shortage of food in bulk as to insufficiency of the more palatable foods.

> "There seems little doubt that in both 1941 and 1943 there was some underfeeding and unequal consumption of the more palatable and expensive foods by the different sections of the population. The committee, however, has no means of estimating whether the position has improved or deteriorated between 1943 and 1948, and thus is unable to determine whether or not such groups as families with a large number of children, who were known to be underfed before the war, are now receiving a sufficient diet."

The individual surveys suggest that there was an improvement in working-class diet as compared with the pre-war period, and that people who had no special privileges could and did get enough calories during the war period, though at the expense

of considerable changes in food habits. Since 1939 the diet of the nation has, on the average, deteriorated in variety and palatability, but supplies of calories have been well maintained and those of most nutrients increased. But direct information about the consumption of food by different groups is still disappointingly scanty, and it cannot be said what degree of underfeeding, if any, there has been in the population.

Clinical Assessment

The section of the report on clinical assessment of the nation's health in terms of nutrition cannot in the nature of things be very conclusive. The information available is scanty or patchy, especially concerning certain population groups; and even when a change is noted in the statistics or the surveys, concerning perhaps the growth rates of juveniles in East End boroughs or the incidence of sick leave in the Metropolitan police, it is never certain to what extent other environmental factors contributed. In the years since 1939 there have been many circumstances apart from food difficulties to depress communal health, and at the same time it is questionable how far any improvement in health is to be ascribed to the improvement of the food intakes of certain classes of the population and how far to the improvement of clinical treatment and the better understanding of hygiene and welfare.

The experimental evidence on the effect of diet on mortality and morbidity is very slight, except in connexion with pregnancy and childbirth. The report mentions the analysis made in 1946 of the causes of maternal death in England and Wales (*British Medical Journal*, 1946, **1**, 456) and the report on maternal mortality in Scotland, 1911–45, by P. L. McKinlay (H.M. Stationery Office, 1947). In both cases the large reduction in mortality from sepsis during the immediately preceding years is noted, and, while this is due partly to improved methods of treatment, resistance to infection may itself be assisted by diet. A study of infant mortality in England and Wales (*British Medical Journal*, 1948, **1**, 1216) suggests that there was no exceptional reduction during the war and post-war years, but only the continuation of a decrease which had been apparent for many years before the war.

The only disease which the committee considers worth discussing in relation to diet is tuberculosis. Here the conclusion is reached that there is no direct evidence that diet has influenced the rates of mortality or morbidity. The provisional death rates from respiratory tuberculosis in England and Wales per million living were as follows for certain years and certain ages:

Age	Males					Females				
	1938	1939	1944	1945	1946–7	1938	1939	1944	1945	1946–7
15–19	348	368	287	266	251	605	601	523	512	494
25–34	739	723	637	632	626	728	726	670	657	724
45–54	1,133	1,158	1,077	1,024	1,004	340	353	273	288	266
65–74	643	678	750	781	794	233	237	210	218	223

The only group in which the rate has consistently climbed is that of men over 65. Two possible explanations are: first, that these men had undergone the strain of two wars, and in the last war undertook many extra duties, such as those of air-raid wardens; and, secondly, that the advent of *x*-ray examination as part of the routine for any chronic cough brought to light a number of new cases, some of which would otherwise have been diagnosed as chronic bronchitis.

Some interesting figures relating to general morbidity have been obtained from Rugby school, where the conditions of life were the same during the war years except for alterations in diet necessitated by rationing and wartime circumstances. During the pre-war years 1933–8, when the average number in the school was 597, the average number of admissions to the sanatorium was 860, representing 5,198 boy-days, the average number of days in the sanatorium being 6.1. In the subsequent years the figures were as follows (influenza was rampant in 1940 and 1943, and in the latter year there was also an outbreak of mumps):

Year	No. in School	Admissions to Sanatorium	Boy-days	Average No. of Days for Boys in Sanatorium
7 war years:				
1939	552	724	3,950	5·3
1940	495	1,192	7,342	6·2
1941	458	544	3,325	6·1
1942	451	586	3,845	6·5
1943	494	743	4,698	6·3
1944	533	410	2,101	5·1
1945	543	492	3,131	6·3
2 post-war years:				
1946	569	461	2,754	6·0
1947	582	550	2,876	5·2

General practitioners have mentioned a great increase in complaints of vague ill-health; these cannot be disregarded, but there is no evidence that they are related in any way to diet.

The growth of children is generally considered a valuable criterion in the assessment of nutrition. Information concerning the pre-school child and the adolescent is very fragmentary. Of the school child medical officers of schools report an absence of any marked change from pre-war average measurements. The physique of children was improving before the war. There was considerable improvement, for example, in the heights and weights of London elementary school-children as between the first decade of this century and the immediate pre-war period. Any improvement in physique observed in wartime was probably again only the continuation of a process in operation before the war. Such figures as are available suggest that the physique of children was maintained during the war years, with the exception of 1941, but tended to fall back in the years 1945–7.

Surveys and Estimations

The committee reviews the various surveys which have been made of the nutritional state of the population. Before the war the only systematic attempt at an examination of the state of nutrition was made in the school medical service. Since then there have been the rapid clinical surveys under the auspices of the Ministry of Health, begun by Professor Sydenstricker in 1942, and continued by Dr. H. S. Stannus and Dr. R. B. Hawes, and subsequently by other officers of the Ministry. "Although the rapid clinical surveys report that the physical condition is satisfactory, the committee cannot express an opinion on the question whether those engaged in manual work have had enough of the right kind of food to enable them to respond to all the calls made on them." The aged have undoubtedly experienced difficulties; the fault probably lies not with the diet but with the accompaniments of old age, especially the inability to shop adequately and to cook satisfactorily.

Finally the committee turns to certain biochemical assessments, while again pointing out the paucity of the data and the danger of arguing from data obtained from relatively few subjects. It has been able to study a mass of valuable material collected by the Oxford Nutrition Survey. From this and a large number of other sources which are cited it appears that nutrition in relation to the following factors was uneven in the population during the war: protein, iron (if indicated by haemoglobin values), ascorbic acid, and vitamin A. Nutrition in respect of the vitamin B complex was probably satisfactory. Uneven biochemical levels imply uneven bodily reserves.

Among the Oxford material was a very large number of estimations of serum and plasma proteins, but it is admitted that the significance of variations in the level of serum proteins, other than those due to exercise and climate, is not known. It is remarkable that H. M. Sinclair reported rather higher concentrations in the serum of semi-starved Dutch children in 1945 than in the serum of English children of the same age; and as high figures for the plasma of returned prisoners of war in 1945 as for the plasma of Oxford students. It is considered doubtful whether moderately low concentrations of serum protein, even when found as mean values for population groups, can be regarded as evidence of inadequacy of protein in the diet.

As for iron, low haemoglobin concentrations in the blood were found in 1940–2, by various investigators, among school-children, nurses, students, adult men and women of the working-class, and pregnant women. Investigations made subsequently to 1942 did not reveal any evidence of increase of anaemia, except that low values were found in some investigations in Aberdeen and in Dundee in 1944. Davidson and Roscoe (*British Medical Journal*, 1944, **2**, 333) found that the levels in the blood of elementary school children and of pregnant women in Edinburgh improved after 1942. On the basis of work by the Oxford and other investigators it is suggested that there were marked variations in the ascorbic acid factor in nutrition during the war. Some sporadic deficiencies in vitamin A have also been shown, but nothing to suggest that the incidence is higher than before 1939. The need for further research in the interpretation of biochemical estimations is indicated.

Social Aspects of Food Control

Food rationing, though necessary in present circumstances, is regarded by the committee as a thing by no means in itself desirable. Energetic measures should be taken so to improve the food position as to bring all restrictions as soon as possible to an end. On certain psychological aspects of present-day restrictions reports have been obtained from Women's Voluntary Services (the reports relate to early 1948, when conditions were in some respects worse than at present—e.g., rationing of potatoes). They show that, especially for families who could not obtain meals out, there was difficulty in securing sufficient unrationed food to provide, with the rations, really adequate meals. The restricted supply of fat was said to be a serious problem; there were complaints of insufficient milk, shortage of sausages, and poor quality of some meat and offal. Waiting in queues contributed to the fatigue and irritation of those responsible for family catering. Monotony of diet resulting from restricted choice of foodstuffs had added to the unattractiveness of meals. The difficulty of entertaining friends had deprived many people of one of their main domestic pleasures. Again, many restaurants of the less expensive type left much to be desired in service and cleanliness—a point also stressed at the recent Health Education Conference in London.

The report makes suggestions on certain special points. One is the lack of school meals during the school holiday periods. There should be a priority allocation of food, especially of milk, free of charge, for consumption by school-children at such times. It advocates the extension of canteen services and civic restaurants. In 1948 there were in Great Britain 4,714 large factories (employing more than 250 persons) and 8,825 smaller factories with canteens serving substantial hot meals. Special food allowances should be made for industrial workers for whom canteen or similar services are not available and for adolescents where there are no canteen or civic restaurant facilities. It calls also for the development of meals delivery services for infirm old people.

On the question of hospital diet the committee draws attention to the memorandum issued by King Edward's Hospital Fund for London in 1943 which stressed the value of rightly planned hospital dietaries as a therapeutic and educative measure. The appointment of catering officers for hospitals is important, and such officers should be responsible for the feeding arrangements at all stages, visiting the wards and ward kitchens at mealtimes to ensure that the food reaches the patients in an appetizing condition. Canteen facilities for out-patients should also be provided. The committee believes that those who teach domestic science in schools often do so in ignorance of the home background of the ordinary pupil; this is a defect which should be remedied.

Changing Food Habits

It is not only the composition of the food on the plate but the attitude and habit of the individual which may have a determining influence on nutrition. It may well be that present-day diet is theoretically adequate and yet is made less than adequate by reason of various attitudes towards it—attitudes resulting from the traditional pattern of food tastes and habits common to the British people. For example, a community accustomed to high fat consumption may be seriously disturbed by lack of it. A people who have always masticated their bread with a spread of fat may find it almost intolerable to take their bread dry, however attractive the roll. Thus there may be under-feeding from sheer boredom with food. Fats have a greater repletion and satisfaction value than carbohydrates, so that it is not uncommon nowadays to hear the remark that "meals don't stay with you as they used to."

In the study of changing food habits the committee thinks that first attention should be paid to the age group 15–25. From this group will come the parents of the near future, and any change in tastes and habits is bound to have its effect upon the coming generation. It is also a group which has been influenced directly or indirectly by the institution of school meals and school milk, and a study of it may show how far these services have had an effect on tastes. Further, this age group has matured in a period of shortages and must therefore have tended to make its own adjustments to abnormal circumstances. There is a field here for inquiry by competent investigators into fundamental changes in food habits which may have occurred amongst young people as a result of wartime and post-war diet.

The committee ends its report with a series of recommendations. Those which propose consideration and action by Government departments have been set out in the immediately preceding paragraphs. It draws particular attention to the need for more detailed information concerning the range of individual energy requirements within groups of the population; for a comprehensive study of the relation of the distribution of the day's calorie intake to efficiency of work, particularly in heavy industries, and for the provision of machinery for ascertaining at regular intervals the consumption of food by groups and classes of the population.

The report is published by the British Medical Association, Tavistock Square, W.C.1, at 7s. 6d.

Reports of Societies

THE IDEAL MEDICAL FILM

"What constitutes the ideal medical film?" was the subject for discussion at a joint meeting of the Scientific Film Association and the Royal Society of Medicine on February 21. Sir KENNETH GOADBY presided.

Professor R. J. S. MCDOWALL said that the ideal medical film had not yet been created, and mentioned the limitations of the range of subjects for medical films. Subjects selected for film presentation should be those the student could not conveniently observe directly. The representation of growth or of long-term experiments, which would otherwise be too time-consuming, was suitable, as was also the representation of subjects difficult to observe directly, such as the movement of the villi of the intestine.

Medical teaching films should be in colour, and, on the whole, it was better to have a sound track. Captions should be short and the interposition of diagrams to remind the students of what the film was really about was useful. Obviously a film should show movement. Pictures of chemical tests were not suitable; anybody could show how the contents of a couple of beakers changed colour. Preclinical students might well be shown films of what happened in hospital—for example, the movements of patients suffering from nervous diseases—while clinical students might be reminded by the film of what happened in the laboratory. Most films were too long. The ideal length would be ten minutes, after which the opportunity might be given to the student to take notes, which he could not do while the film was being shown, and then the film could be shown again if necessary. It was a disadvantage to have a film made by one person, unless indeed a "medical Korda" should arise. Ideally there ought to be a producer who knew the technical side of the business, a teacher who knew the

teaching technique, and a student "victim," who would be critical, as students usually were.

Mr. C. J. LONGLAND said that there was little evidence on the value of films in university teaching. In the Navy, apparently, reliance on the film method of teaching alone had resulted in students picking up the necessary instruction in one-third of the time required using the older methods. Competent projectionists and reliable projectors were required; also there must be proper arrangements for blacking out the lecture theatre.

The film tended to destroy the corporateness of the class, and perhaps gave some rein to the less grave elements. Again, it proceeded relentlessly with its exposition, quite independently of any audience reaction. The ideal film would have a properly controlled tempo. It might be said that the test of a good film was the desire of those who had seen it to see it again; on the other hand, a good film might be so complete and satisfying as to require no repetition. The ideal teaching film must be adjusted to the understanding of its audience and stimulate thought and discussion. Films should be short. Their function was only to demonstrate a particular series of movements. It was arguable that ordinary clinical teaching led to a static conception of disease, whereas the film suggested a continuously evolving picture, emphasizing those intermediate phases which were omitted from textbook illustrations. How valuable would be a film, if it could be made, illustrating the whole history of a case of acute appendicitis, from its beginnings with a mild abdominal pain in an otherwise healthy person, and including animated diagrams and other devices to show time relationship.

Technical and Professional Collaboration

Dr. R. W. G. OLLERENSHAW confessed that he had himself made a film. He agreed that the ideal medical film did not exist, and it was very doubtful whether it ever would. If it did, it was likely to emerge from the medical schools and their own units rather than from the technically more advanced professional studios, which must needs cover a wider field. The professional was lucky if he could find a medical adviser who could adapt himself to film work. There were very few medical men—and with them he grouped the teachers in pre-medical subjects—who had really grasped the application of the film to clinical research or had sufficiently mastered the technique of film-making to be able to collaborate intelligently with a production unit. The comparatively few men who were qualified in the technical sense and the even fewer men who had the double qualification should be employed in the medical schools in the most economical way. They should not be concerned with the production of what had been rudely referred to as "prestige films"—films which seemed to be to the glory of Mr. X, and chiefly to show Mr. X removing something. He was not suggesting that the surgical epic had no place; he thought it had a place in teaching, but only as one brick in the edifice of instruction.

Much was heard about films being expensive to produce, but he felt that medical schools, when assessing their requirements for the year, should include an item in the budget for film production. Perhaps the reason for the shortage of films was because they did not set about asking for them. The demand was there, and was almost completely unsatisfied. The matter had been left in the hands of a comparatively few enthusiasts. Teachers must abandon their parochial outlook. Before a film was made which put over the ideas of one man or one school considerable thought should be given to the matter. Reference should be made to the "Deans' list" of the Scientific Film Association, and to the Association's advisory services to prevent overlapping.

The demand for long films, Dr. Ollerenshaw continued, was comparatively small. He believed very much in "sentence" or "paragraph" films—snippet films, perhaps with no captions at all other than an identifying label. There was room also for short technical films demonstrating a particular technique, such as intravenous injection. He showed one short film illustrating a method of everting the eyelid. Another illustrated visible gastric peristalsis; when this phenomenon was observed in the wards, nine times out of ten the students were not present. He concluded by showing a longer film illustrating segmental resection of the lung in bronchiectasis, but leaving out the towelling and swabbing which consumed so much time in films of surgical operations and were not very instructive.

Professor R. CRUICKSHANK said that as a bacteriologist he was just beginning to use the film in teaching. He used it as an introduction to group discussions on a particular subject, such as the defences against disease. He had found the film useful also for the teaching of techniques, as, for example, how to take swabs or do a blood culture—often worth far more than a long film showing a surgical operation which most of the students were never likely to have to undertake.

Sir KENNETH GOADBY summed up the discussion by saying that the prevailing opinion was evidently in favour of short films rather than long, and that colour, movement, sound, and adequate captions were essential.

B.C.G. VACCINATION

At a meeting of the Devon and Exeter Medico-Chirurgical Society on February 2 Dr. G. E. ADKINS discussed the scope and use of B.C.G. vaccine.

Dr. ADKINS said that B.C.G. vaccine was a live vaccine of a bovine strain, innocuous to man, first isolated in 1907, and stabilized since 1927. Prepared in Copenhagen, it was flown to this country. The vaccine produced tuberculin sensitivity in those who had never been infected with tuberculosis, and thus raised their resistance to subsequent infection.

Recent tests on 2,500 Devon children gave figures comparable with those found elsewhere in England. Thus 25% of five-year-old children showed positive tuberculin tests; at 10 years old the figure was 30%; at 15 years, 50%; and at 17 years, 80%. B.C.G. vaccine would be given only to tuberculin-negative children. It was not proposed to give it as a routine to five-year-olds but it should be given to those at special risk, for example, children in contact with cases of tuberculosis, diabetics, nurses, and medical students. When a child had been in contact with an open case a tuberculin test should be done. It was found usually that such children were already infected. With closed cases the risk was less, but it was important to inoculate newborn babies if there was a case of tuberculosis in the home.

The vaccine would be given either at a hospital or at centres approved and provided by the local health authority. To those with a negative tuberculin reaction an intradermal injection of 0.1 ml. was given. Care must be taken to avoid subcutaneous injections which might cause local suppuration. For six weeks before inoculation the child must be isolated from all tuberculous cases, and isolation for a further six weeks was advisable while immunity was developing. In fact the child was no more likely to contract tuberculosis during the phase of developing immunity than at any other time, but if infection did arise during this period the vaccine might be wrongly blamed for it. If twelve weeks' isolation was to be insisted on, hostels, costly and at present difficult to provide, would be necessary. An alternative plan, which was the one intended for Devon, was to remove all sputum-positive cases from the home during the twelve-week period.

B.C.G. vaccine would keep only for a week, but the degree of immunity conferred by it was believed to be such that only one vaccinated person would develop tuberculosis for every four unvaccinated. Cattle were protected completely by B.C.G. vaccination. Wells at Oxford had developed a vole vaccine which seemed to answer well but was still undergoing trial. Protection after B.C.G. vaccination appeared to last for about five years, after which there was evidence that immunity slowly diminished.

In order to focus the public's attention on the need for care of the feet and footwear, a National Foot Health Week will begin on June 12 with a four-day exhibition at the Central Hall, Westminster, to be opened by Sir Wilson Jameson.

Correspondence

Treatment of Wounded in Malaya

SIR,—Dr. Rex Binning (January 14, p. 128) expressed concern lest the lessons of medical tactics learnt in the war of 1939–45 might be in danger of being forgotten. In particular he feared that early surgical treatment was not being afforded those who were wounded in the operations against the bandits in Malaya.

I should like to reassure Dr. Binning that the valuable medical lessons of the last war are not forgotten, and the experience gained in the campaigns in Burma forms the basis on which our present medical tactical doctrine in Malaya is founded.—I am, etc.,

London, S.W.1. N. CANTLIE, Lieut.-General; Director-General, Army Medical Services.

Increasing the Brain's Blood Supply

SIR,—I was interested in your leading article (February 18, p. 423) on the recent surgical attempt to increase the brain's blood supply by effecting an arteriovenous anastomosis in the neck. This idea is not, of course, a new one. The operation of "reversal of the circulation" for ischaemia in the limbs was introduced and enjoyed a short popularity in some quarters about 40 years ago. It was described then in most contemporary textbooks of operative surgery.

The subject occupied an important surgical society at one of its conferences at that time. Several successful cases of arrest of gangrene in the extremities consequent upon the operation were convincingly demonstrated to an appreciative audience, but further discussion seemed unnecessary after the last remarkable case presented by the late Professor Alexis Thompson. After he had described "reversal of the circulation" in one lower limb with dramatic improvement, and subsequent "reversal of the circulation" on the contralateral side with an equally gratifying result, Thompson went on to describe a repetition of the same procedure upon the great vessels of the neck after that same patient had been overtaken by a cerebral vascular accident with hemiplegia. The gratification of the audience when Thompson described the consequent improvement of the hemiplegia and their congratulations on his surgical success were a little abated when he proceeded to demonstrate the anastomoses obtained subsequently at necropsy (the patient having ultimately died of pneumonia). Both vessels in the neck were the seat of a solid thrombosis. Alexis Thompson clearly demonstrated with his customary sense of the dramatic, not perhaps the efficacy of "reversal of the circulation," but certainly the tendency of hemiplegia towards spontaneous improvement whatever surgical obstacle is put in its way.—I am, etc.,

London, W.12. IAN AIRD.

Radiological Diagnosis of Pneumoconiosis

SIR,—Dr. A. T. Doig (February 18, p. 437) is correct in pointing out that the pneumoconiosis medical panels have to assess disability as well as radiological abnormality before awarding compensation, and it is nowhere implied in our paper that this is not so. He is, however, incorrect in stating that every applicant for a certificate of disability is examined clinically. In practice, we understand, the first step is to scrutinize the radiograph, and to proceed to a clinical examination only if there is then thought to be sufficient radiographic evidence of pneumoconiosis. Thus, while radiographic diagnosis of abnormality is not considered sufficient by itself for the grant of compensation, it is considered necessary, and the inconsistency revealed by our tests will play a part in the work of the panels.

No published report that we know has considered quantitatively the errors that may arise in the assessment of disability by clinical examination, but some preliminary studies carried out in this unit suggest that they may be at least as great as the errors of radiological assessment. Further investigation is required, but meanwhile it is surely rash to suggest that the solution of the problem of avoiding errors and inconsistencies in awarding compensation lies in "adequate clinical examination and . . . skilled investigation of the occupational history."—We are, etc.,

Medical Research Council, Pneumoconiosis Research Unit, Penarth, Glam. C. M. FLETCHER. P. D. OLDHAM.

SIR,—There can be no doubt about the wisdom of Dr. A. T. Doig's statement (February 18, p. 437). To anyone interested in the pneumoconioses it is imperative that we do not assess these men by *x*-ray findings alone. Pulmonary efficiency can never be gauged by radiology but purely by clinical and clinico-physiological examination. I would support Dr. Doig's view that the original annotation on this subject (January 28, p. 235) reviewing Drs. Fletcher and Oldham's report seemed to infer that the official medical panels investigating such cases were only guided by *x*-ray grading. This can hardly be so, as the medical officers who have made a study of this subject know only too well that immature fibro-silicotic changes may not be visible on a radiograph, and yet even at this stage the worker is greatly incapacitated as a result of focal emphysema. On the other hand, we have all been impressed by the ability for work and the little inconvenience suffered by men who have advanced *x*-ray manifestations of the disease.

I willingly endorse Dr. Doig's opinion, however, "that too much weight is being placed on the radiological element in the diagnosis of pneumoconiosis." Especially is this so at the present time. It is essential in clinical medicine as a whole that *x*-ray interpretation be used as an ancillary aid to diagnosis, and the industrial pulmonary hazards are no exception to this rule. In dealing with pneumoconiosis, true assessment of a man's disability can be reached only by (1) a careful occupational history; (2) a clinical examination which checks up all systems (this has to be stressed, as the majority of men examined are past the meridian of life); (3) *x*-ray examination. If this routine is not adopted then there can never be any hope of recommending any form of satisfactory treatment to help these men, nor yet of correctly assessing their cases for compensation purposes.—I am, etc.,

Edinburgh. C. KELMAN ROBERTSON.

SIR,—Dr. A. T. Doig (February 18, p. 437) has very rightly drawn attention to the difficulties of radiological diagnosis of pneumoconiosis. I have often been struck, when performing post-mortem examinations on these cases, by the difference between the *x*-ray picture and the post-mortem appearances. I found that where a satisfactory radiograph showed definite, if small, masses, they were not visible or palpable on the specimen. I saw, however, fairly frequently small areas of circumscribed pulmonary oedema, and I am wondering whether they may have produced the *x*-ray appearance of nodulation.

I suggest a feasible way to put this to the test would be to examine the patient radiologically, let him rest in bed for a few days, give him at the end of the bed rest a mercurial diuretic (provided there is no renal contraindication to that course) and then radiograph him again. Any change in appearance of the shadows would suggest transitory pulmonary oedema (due to failure of the right heart), while persistence of the shadow would suggest a dust nodule.—I am, etc.,

Six Bells, Abertillery, Mon. K. TRIGER

Refresher on Sinusitis

SIR,—I would like to take this opportunity to congratulate both your *Journal* and Mr. C. Gill-Carey for his exquisite article on sinusitis (February 18, p. 427)—truly well written, lucid, and to the point. It should be of paramount interest to general practitioners, especially in large industrial towns, where this complaint is so frequent that we all should be well conversant with it. Indeed, the articles for G.P.s under the heading of "Refresher Course" have so far been most lucrative and informative, and in the issue of February 18, in particular, a hit has truly been made. May the good work continue.—I am, etc.,

Glasgow, S.1. ROBERT K. STEEN.

SIR,—It was disappointing to find no reference in Mr. C. Gill-Carey's illuminating article on sinusitis (February 18, p. 427) to a simple form of sinus drainage, not requiring specialist training, that is available to every general practitioner. I refer to the Proetz displacement method.

All that is required is a couch or bed over the end of which the patient can hang his head as he lies supine, a kidney dish for him to hold, a pad of wool to cover his eyes, a bland saline solution containing ephedrine (I use "sulfex" 1 part, normal saline 3 parts), and a simple Proetz suction apparatus, consisting of a strong rubber bulb inserted in a glass nose-piece. The practitioner sits at the right of the patient's head and with the left hand covers the eyes with the cotton wool. He runs a few millilitres of the solution, using a nasal dropper, into each nostril (the amount varies with each patient), telling the patient to pant through the mouth. When enough drops are inserted, judged by the tendency to splutter, he compresses the bulb in his right hand and inserts the glass nozzle into one nostril, closing the other with his left hand. He tells the patient to keep saying "ki ki ki" while he releases the bulb. He repeats the process in the other nostril. The ephedrine tends to open the ostia, and the suction tends to draw the thick mucus from the sinuses. As the instrument is withdrawn the negative pressure in the sinuses tends to suck the thinner fluid containing the sulphathiazole into them. The patient is then helped into the upright position and encouraged to blow his nose, "cabman" fashion, into the kidney dish. Diagnosis is aided by an inspection of the discharge.

Usually the patient gets a great sense of clearness and relief, while in some cases a recovery in hearing if deafened by catarrh. I invariably carry out this treatment before eustachian catheterization or politzerization. It is useless, except diagnostically, in allergic rhinitis, and is of the greatest value in stopping the prolonged flow of mucopus following a severe cold, especially those cases with an irritating cough on going to bed. Four or five daily treatments usually suffice. Children are quite co-operative, and I have treated many as young as 5 years old.

In dental cases, when the offending tooth has been withdrawn, it is often completely successful, and even in very chronic cases, when the patient has refused operation, great improvement, and sometimes a cure, can be obtained if the patient and doctor are willing to carry on daily for three or four weeks. During the last 25 years I have been able to help a few hundred "bronchitics" whose stomachs had been ruined by expectorants and bowels bound by narcotic linctuses, as they were all sinus cases. In about 3% of my cases I had to make an antrostomy under the inferior turbinate of about ¼ × ¼ in. (1.2 × 0.6 cm.), and to complete the drainage used the Proetz method only after an interval of a week to ten days. The opening is usually closed in three weeks and the ostium opened again, a healthy antrum resulting. There would be a great saving in time if this simple and safe treatment was in the hands of every practitioner.—I am, etc.,

London, N.W.11. C. BERKELEY WAY.

Anti-Pernicious-Anaemia Factor

SIR,—I read with great interest Dr. Lester Smith's paper on the crystalline anti-pernicious-anaemia factor (December 17, 1949, p. 1367). At one point in this he survey's SubbaRow's previous work regarding accessory haemopoietic factors, and states:

"One is inclined to suggest, therefore, that the supplementing action of Jacobson and SubbaRow's accessory factors may have been due to contamination with small proportions of their primary factor (presumably the anti-pernicious-anaemia factor in crude form); satisfactory responses might well have been obtained with larger doses of the primary factor alone."

The following abstracts from literature may interest your readers:

1. SubbaRow confirmed his experiments with commercial L-tyrosine, in which the presence of vitamin B_{12} is unlikely.[1]

2. SubbaRow repeated his experiments with increased doses of each factor, either alone or in various combinations, in order to exclude the possibility mentioned by Lester Smith.[2]

3. Munk demonstrated by *in vitro* experiments that tyrosine does not increase the action of liver extract on normal bone-marrow, but that it causes an increased response in cases of untreated P.A.[3]

4. SubbaRow observed in his fractions the presence of xanthopterin, a purine, a polypeptide, and of L-tyrosine. Thymine and thymidine are purines. Though high doses of these factors are required[4,5] the possibility of a synergism of vitamin B_{12} with folic acid, thymine, or thymidine has not yet been experimentally disproved.

5. Girdwood stated recently that it is by no means proved that vitamin B_{12} and folic acid are the only haemopoietic factors.

6. Hausmann recently reported the isolation of a cobalt-containing polypeptide of haemopoietic potency which differs from crystalline B_{12} as it cannot be precipitated by ammonium sulphate. It is possibly identical with the Wills factor.[5]

7. Patel reported that in tropical (nutritional) macrocytic anaemia the activity of crude liver extracts was higher than might be expected from their vitamin B_{12} content and that an adequate response to vitamin B_{12} could be obtained from high doses only.[6] This confirms Das Gupta's previous experience with purified liver extracts.[7]

I do not wish to belittle Lester Smith's work, for which I have the highest admiration, but the history of the vitamins and Elvehjem's research on the interdependence of vitamins strongly indicate that more than one factor is required in deficiency diseases. More should be known regarding the interaction of other vitamins, known and unknown, with vitamin B_{12}. The action of the liver principle upon folic acid conjugates as reported by Welch and his co-workers is important in this respect.—I am, etc.,

Bombay. F. W. VAN KLAVEREN,
Research Department, Teddington Chemical Factory, Ltd

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2 *Vitamins and Hormones*, 1945, **3**, 278.
3 *Schweiz. med. Wschr.*, 1948, **78**, 988.
4 Spies, T. D., *et al.*, *Sth. med. J., Nashville*, 1946, **39**, 269.
5 Hausmann, K., *Lancet*, 1949, **2**, 962.
6 Lecture on "Nutritional Macrocytic Anaemias" at the Indian Science Congress Poona, January, 1950.
7 *Ind. med. Gaz.*, 1943, **78**, 34.

Pain in the Chest

SIR,—In his article "Pain in the Chest Wall Simulating Heart Disease" (February 11, p. 332) Dr. D. Rhodes Allison describes several cases with a diagnosis of "muscle strain." May I point out that from the descriptions he gives these cases are indistinguishable from Bornholm disease, the onset of which is often sudden and associated with physical exertion.[1] As Dr. Rhodes Allison admits, it often required specific questioning to recall the history of the injury, and there might be a "considerable interval between the trauma and the onset of angina-like pain."—I am, etc.,

London, S.W.14 J. H. S. HOPKINS.

REFERENCE

1 Lock, E. A., and Farnsworth, D. L., *Trans. Ass. Amer. Phys.*, 1936, **51**, 399.

SIR,—Dr. D. Rhodes Allison's excellent paper on this subject (February 11, p. 332), with all of which I entirely agree, will not, I hope, lull the general practitioner into a false sense of security in dealing with any sudden pains occurring in the chest. From experience I have come to regard any sudden and severe pain over the precordial and sternal areas with grave suspicion.

The pain of muscular strain can, as he points out, usually be diagnosed from the history and the fact that movements against resistance intensify the pain. As regards fibrositic pain, it is a curious fact that fibrositis of the chest wall appears to be much more common on the left side of the chest than on the right, but this is probably because patients are not as concerned about a pain on the right side of the chest. Fibrositic nodules or tender spots, as Dr. Allison says, can usually be detected.

But coronary thrombosis is a condition so serious and often so dramatic in its climax that any diagnostic error can be most disconcerting. It is an unpleasant experience when one has seen a patient in the morning or afternoon to find a relative waiting at the evening surgery not for a bottle of medicine or some liniment for a pleurodynia or a strained chest muscle, but for a death certificate.

The signs and symptoms of cardiac infarction are by no means always characteristic, and little help can be obtained from the stethoscope or the sphygmomanometer. During the last three years I have seen in practice 14 cases of coronary thrombosis, and all but two of these have been confirmed—10

by electrocardiography and two by post-mortem examination. In three of these cases there was no previous history or symptoms of heart disease. The last case, which occurred a fortnight ago, was that of a woman of 70 who had been out shopping and had felt suddenly ill after carrying her baskets home. She looked ill and shocked and complained of intense pain in both arms and hands, but said she had no pain in the chest. Fortunately I told the relatives I thought she had had a coronary thrombosis—she died seven hours later.

I now make it a rule in every case of severe precordial pain accompanied by signs of cardiac shock to reassure the patient, give him morphine, tell the relatives that there is a serious possibility of coronary thrombosis, and insist on the patient seeing an experienced cardiologist for an electrocardiogram as soon as possible.—I am, etc.,

Appley Bridge, Lancs. ERIC SHIRLAW.

Fifty Years of Medicine

SIR,—It may interest some of your readers who have followed the correspondence about surgery and gynaecology to know that when I was at St. Bartholomew's Hospital as a student the two subjects were as far apart as the poles. Matthews Duncan was the gynaecologist, and when any patient of his needed an operation, as a matter of course he called in one of the surgeons.

When I went as a general practitioner to Manchester I was surprised to find that the gynaecologists there did their own operations. When Cullingworth went up to London from Manchester the London surgeons were up in arms against him because he operated. Moreover, he was the first man to teach me to use antiseptics for my hands before making a vaginal examination. At Bart's we were taught to laugh to scorn the teaching of Lister, who had come to King's to try to convince the London surgeons of the value of his methods. Looking back upon those prehistoric days it seems to me that the provincial schools were far ahead of London.—I am, etc.,

Carnforth, Lancs. E. VIPONT BROWN.

SIR,—Mr. Victor Bonney's feelings which he has expressed in his letter (February 4, p. 303) must arouse sympathy in the hearts of many gynaecologists. It is also just and proper that Mr. Bonney should "feel sad," for has he not devoted his life to gynaecology, and is he not considered, not only in this country but the world over, to be the greatest pioneer and teacher of this art? Few would disagree with him that gynaecology is a branch of surgery and an important branch at that, and surely those who desire to practise it should see to it that they are thoroughly grounded in basic surgical principles. It is not to be wondered at that Mr. Bonney should express regret that this branch of surgery should now be divorced from the Royal College in Lincoln's Inn Fields.—I am, etc.,

London, W.1. DOUGLAS MACLEOD.

Aetiology of Erythema Nodosum

SIR,—The article by Dr. S. A. Doxiadis on the aetiology of erythema nodosum in children (October 15, 1949, p. 844) raises the point, what is the cause and nature of the enlarged hilar glands so frequently seen with erythema nodosum? One would infer from this article that the enlarged hilar glands were really part of the primary complex and not infrequently found with corresponding opacities in the lungs, presumably primary tuberculous foci. The fact that *Myco. tuberculosis* was obtained from pus in three of the five cases of cervical adenitis in children tends to point to these enlarged hilar glands being directly caused by *Myco. tuberculosis*. However, though the number of cases has not been large, we have been struck by the frequency with which enlarged hilar glands have been seen in radiographs of cases of erythema nodosum without any evidence of a lung focus. Similar enlarged hilar glands may be found in cases of coccidioidomycosis, of which erythema nodosum may also be a manifestation. Is it therefore not possible that these enlarged hilar glands are but a manifestation of hypersensitivity, just as the superficial erythema nodosum itself, and not specifically tuberculous in origin?

It would, perhaps, be of interest to learn from Dr. Doxiadis the duration of the hilar glandular enlargements relative to the duration of the surface erythema nodosum itself.—I am, etc..

Napier, New Zealand. JAMES C. DORE.

Insufficient Anaesthesia

SIR,—I admire Dr. E. H. Winterbottom's (January 28, p. 247) frank report of a case of inadequate anaesthesia in a curarized patient. How can such a situation be prevented? I always consider that "adequate curarization" and "adequate anaesthesia" are entirely separate entities and merge into one another's province when the anaesthetic agent used—e.g., ether—has a curariform effect.

It is usually quite simple for the experienced anaesthetist to determine whether his patient is adequately curarized. In the patient in whom there still exist some efforts of respiration, adequate curarization will be assured by the presence of a "tracheal tug." In the case in which all efforts of respiratory exchange are absent, then adequate curarization is evidenced by the minimal resistance to inflation and the degree of muscular relaxation present.

For the patient to obtain the full benefits of curarization the concomitant anaesthesia must not be unduly deep, and the optimum level is usually stage III, plane 1 or upper plane 2. Curarization does mask the usual signs of anaesthesia, but I feel that one of the best and most consistent ways of judging whether anaesthesia is adequate is to watch the patient's reaction to a stimulus, whether this be a cut of the knife or traction on a viscus. In cases of inadequate anaesthesia there will always be an increase in the pulse rate. I consider this is a most important sign in the curarized patient, provided other causes of a rise in pulse rate can be eliminated—e.g., inadequate oxygenation, inadequate ventilation, and shock. These states are not difficult to assess and are accompanied by other signs—I am, etc.,

Londonderry. DOUGLAS S. WILSON

Blood-sugar Estimation

SIR,—With reference to the article on blood-sugar estimation by Dr. D. A. Hall (February 11, p. 351), I would like to recall that a portable apparatus was described by me in the *Journal* (November 25, 1939, p. 1035), and this, I thought, covered the clinical requirements for blood-sugar estimation by the practitioner. It was in fact designed for that purpose, and possibly for use in the small cottage hospitals where economy and space ruled out expensive apparatus.

The method is a modified Folin and Wu test, designed to demand the least amount of technical laboratory experience by incorporating in a small portable box reagent bottles fitted with automatic-type pipette-stoppers, graduated test-tubes, and all the necessary equipment for estimation in the home or the surgery. Heat and water are the only requirements not supplied. The technique is similar to the standard Folin and Wu method except that final colour matching is done by dilution in tubes specially graduated from 25 mg. up to 500 mg. per 100 ml. at intervals of 10 mg. A full estimation is completed in about twenty minutes.

Eighty per cent of the results obtained by this method were within 10 mg. of those obtained on the same samples of blood by colorimeter matching, and 96% were within 15 mg. One case of diabetic coma in which the blood sugar was first estimated by dilution in a tube graduated to 1,000 mg. per 100 ml. and actually registered that figure, was subsequently found to be 1,010 mg. per 100 ml. by colorimetry.

Although the Folin and Wu method is not absolute and does estimate a constant of 10–12 mg. of glutathione, it has the great advantage of very stable reagents. Only one standard is needed, and the boiling time is six minutes. Although Hall's suggested method, using the photo-electric colorimeter, gives excellent comparison with that of Hagedorn and Jensen, I do not see how he can hope to get even within 20 mg. of the correct result by visual comparison with standards as far apart as 50 mg., 150 mg., and 300 mg. per 100 ml., except, of course, where the blood sugar is reasonably near the standard.

There is no reason why, if an estimation is to be made in a home or surgery, it should not have more the semblance of an estimation and less of a guess, which it must become in some cases by Hall's method.—I am, etc.,

H. R. MILLAR,
Senior Technician, Diabetic Department, King's College Hospital.

London, S.E.5.

The Origins of Genius

SIR,—Dr. D. V. Hubble, in his interesting review (January 28, p. 229) of Dr. J. L. Halliday's book, *Mr. Carlyle My Patient*, calls attention to Halliday's alternative theories about the significance of Carlyle's early recollection of asking his father "what these little black things were that I seemed to create by rubbing the palms of my hands together." Dr. Halliday's footnote propounds the theory that "they could be regarded as offsprings resulting from his impregnation during the preceding mystic but also passively homosexual union with the father." If Dr. Halliday had stopped at the word offspring I think his proposition would be acceptable, but the introduction of the homosexual motif seems an unnecessary secondary elaboration.

Piaget has demonstrated that quite young children elaborate fantasies on the origin of babies, particularly if stimulated by the recent arrival of a younger sib. Not so long ago I observed a small boy of 2 years 6 months who had climbed into his mother's bed in the early morning. While she dozed he amused himself by plucking small pieces of fluff from the blankets, rolling them into minute balls, and then carefully inserting them into her mouth, with the comment, "Tiny little babies." Tommy Carlyle quite possibly had had similar fantasies, and at the age of 5 felt the need to check them up against reality. His question to his father was probably a polite and tactful hint for some specific sexual instruction.

I agree with Dr. Hubble that there is no evidence on how Tom Carlyle's mind was working at the age of 5, but the present example seems a more probable parallel than the fantasies (correctly Freudian) of Dr. Halliday.—I am, etc.,

FRANK BODMAN.

Bristol.

Erysipeloid

SIR,—I can confirm the opinion of Mr. R. J. McNeill Love (December 17, 1949, p. 1411) and Mr. E. G. Dolton (February 18, p. 438) that this disease is no rarity. As a general practitioner in this fishing port I must have seen between one and two dozen cases a year for the past twenty years, and if the experience of my colleagues is the same, which I have no reason to doubt, then several hundred cases must occur here yearly.

The infection has usually occurred among fish-workers and fishermen, and almost always following a prick with a fish-bone. I agree with Mr. Dolton on the characteristic "down one finger and up the other" spread, but in my patients not only have they complained of tightness but also of intense itching in the affected part, and this is often the only complaint.

In many cases the condition has been so mild that the patient has been unwilling to cease work, and I suspect that in quite a few cases a doctor is not consulted. Before penicillin no treatment had any effect, the majority of cases subsiding within three weeks, only the more severe ones lasting up to two months. Even in these there was little toxaemia.—I am, etc.,

F. W. TABOIS.

Grimsby.

Treatment of Cutaneous Anthrax

SIR,—Dr. John A. Holgate and Dr. Reginald A. Holman (September 10, 1949, p. 575) lay stress on serum therapy and penicillin in the treatment of cutaneous anthrax. Sulphonamides were mentioned only with the assumption that they lend themselves mainly to combat complicating suppuration, though Gold in 1942 used sulphonamides in the therapy of anthrax itself. Dr. L. Hoyle (October 15, 1949, p. 875) reported on the undesired side-effects of penicillin (fever) produced by the destruction of large masses of anthrax bacteria, and he suggested the treatment of anthrax with serum only.

I have no remarks to make about the problem of penicillin, because I have not seen anthrax since the discovery of this drug. Prior to the penicillin epoch I treated anthrax with sulphonamides with invariably satisfactory results. First sulphanilamide was employed, then sulphathiazole. My reports on this subject appeared in 1940.[1] Later other authors also reported similar observations. Thus sulphonamides are effective not only against secondary suppurations (which can no doubt be combated by penicillin also) but against anthrax too. It should be pointed out that sulphathiazole, in the opinion of many authors, is highly effective in the therapy of dermal anthrax and produces no side-effects. Therefore it may be more useful than serum, which is expensive, unreliable, and frequently gives rise to serum sickness.—I am, etc.,

ALEXANDER FERENCZI.

Csorna, Hungary.

REFERENCE

[1] *Dtsch. med. Wschr.*, 1940, **66**, 435.

Porphyria and Pregnancy

SIR,—In a report on a case of acute porphyria (February 4, 1950, p. 275) Drs. Q. H. Gibson, D. C. Harrison, and D. A. D. Montgomery (February 4, p. 275) record attacks of recurrent abdominal colic associated with menstruation which they regarded as a manifestation of porphyria. They also point out that menstruation may usher in an acute attack of porphyria. Conversely, a pregnancy may result in a remarkable improvement in the condition, as the following case history demonstrates.

A married woman aged 22 was admitted to hospital under the care of Dr. J. S. Parkinson on May 1, 1947, complaining of colicky lower abdominal pain, vomiting, and constipation. A similar attack commenced two days after her marriage one month previously and lasted for seven days.

The urine was dark red on admission and showed the presence of a porphyrin. There was no involvement of the central nervous system. Blood pressure and white-cell counts were within normal limits. Constipation was marked; enemata were required for the first three weeks—the returning fluid was noted to be pinkish. The patient's breath had a peculiar mousy odour. The onset bore no relation to menstruation, which had been regular and painless. Her condition slowly improved, and she was discharged on June 21. Porphyrin was still detected in the urine, though in reduced amounts. A porphyrin was detected in three of the patient's relatives, but further details are unfortunately not recorded.

The patient was readmitted on August 26, 1947. She had been well until six days prior to admission, when another attack of lower abdominal pain and vomiting developed. The urine was dark red in colour and porphyrin was present. Two weeks later weakness of the interosseus muscles of both hands was noted, followed in a few days by bilateral wrist drop and weakness of the muscles of the upper arms. Marked tenderness was present in the leg muscles; the knee jerks were absent and the ankle jerks brisk. Sensory changes were not detected. The patient was apathetic at first but gradually became brighter. When discharged on October 7 porphyrin was present in the urine, and the weakness of the hands persisted.

She returned to hospital on January 13, 1948, complaining of retention of urine, diarrhoea, and loss of weight. The bladder was emptied by catheterization, after which she voided urine (containing porphyrin) spontaneously. She was discharged one week after admission. In addition to the bilateral wrist drop, weakness of the quadriceps and dorsiflexors of the ankles was noted.

The patient came under my care on October 28, 1948, in the fifth month of her first pregnancy. The accompanying letter from her doctor stated that she was in better health than at any time since the complaint had been diagnosed—a fact which the patient confirmed. The pregnancy proceeded normally, signs of toxaemia did not develop, and the maximum systolic and diastolic pressures recorded were 130 and 75 respectively. Labour commenced two weeks prematurely on January 30, 1949, lasted only seven hours, and resulted in the spontaneous delivery of a healthy male child, weighing 5 lb. 3 oz. (2.3 kg.). The puerperium was uncomplicated, and both mother and baby were discharged fit and well on the 14th day. Porphyrin was present in the mother's urine, but absent from the baby's. She was visited by Dr. Parkinson five days before discharge. He reported as follows: "This lady is better than I have seen her at any time previously. The neuritis has completely cleared up." On his advice breast-feeding was discontinued.

The patient attended the post-natal clinic two months after confinement and was maintaining her excellent progress. The baby was readmitted to hospital when three weeks old and died a few

days later from peritonitis due to a perforating ulcer of unknown aetiology at the lower end of the ileum.

She was seen again on February 14, 1950, and apart from an attack of lower abdominal pain and vomiting in April, 1949, she had been in good health, though she remarked, "My urine is still the same funny colour."

—I am, etc..

Salford. E. E. RAWLINGS.

Maternity and the N.H.S.

SIR,—Having read Professor J. Young's paper (February 18, p. 392) with interest, I venture to make some comments on it. I think that no one will dispute the fact that the present obstetrical service is not ideal, nor even satisfactory. However, the unification of the service so that the midwife may be in sole charge of the normal case (with which I more or less agree) has its disadvantages. In the first instance, not only will the midwife have to deal with the delivery, but she will also have to supervise mother and child during the puerperium. This she is not fitted to do at present, nor will she be in the future unless her training, especially in respect of paediatrics, is improved. Too often is the family doctor called in to a breast abscess which is on the point of rupturing or is informed of a neonate who has been weaned from the breast for a trifling reason.

The local-authority maternity clinics have done good work in the past, but of course the position whereby a doctor who supervised the antenatal care was not present at the difficult delivery was obviously farcical. So was the position whereby a doctor who had little or no obstetrical training was placed in charge of one of these clinics. This obtained in the past, and still does in many parts of the country. If these clinics are to survive they should obviously become part of the hospital service, whose obstetricians must be available for domiciliary work. If this is not feasible they should be scrapped,

The idea of a G.P. obstetrician was a sound and fruitful one if it had been established properly. As I have had a fairly considerable experience in both normal and abnormal midwifery, I venture to say that the G.P. obstetrician could be the "king pin" of the domiciliary service if the "set up" had been arranged differently. The standards for acceptance should be much more rigid and the requisite experience more clearly defined. The local-authority clinics should be staffed by G.P. obstetricians. These clinics should then be taken over and supervised by the regional hospital board.

Basically, of course, no comprehensive scheme can be worked successfully until the midwives' training is improved and the training of the medical student is improved. In this latter respect a student should be able to "opt" for obstetrics, when he should be given a much more thorough grounding in the subject than the average student. He should then become the potential G.P. obstetrician.

At present one suspects that vested interests are being forwarded under the guise of benefiting the people—the midwives wish to "run the show" so that they may be accountable to no one except their own statutory body, and the R.C.O.G. wants control because the college is young and enthusiastic, and perhaps it has not yet tasted sufficient power. Both wish to hold the reins by excluding the general practitioner. One doubts whether their ambitions are completely altruistic.—I am, etc.,

Rugby, Warwicks. P. J. O'REILLY.

SIR,—I write agreeing with Professor James Young (February 18, p. 392) that the multiplicity of controls of the pregnant woman is deplorable, but disagreeing with his solution. I consider that the general practitioner should control the pregnancy, not the local-authority clinic.

Antenatal clinics were started when the poorer section of the community could not afford antenatal care from their own G.P. and when the older G.P.s had no training in antenatal care. The National Health Service abolishes the first condition, and the majority of G.P.s are now trained in modern antenatal care.

Under the present regulations a simple and efficient arrangement exists, leaving out the local clinic. An expectant mother naturally reports first to her G.P. He can give her a full examination at three months, and, knowing her health and home background, can decide if her confinement should be at home or in hospital. A successful home confinement needs the co-operation of the midwife. But this is not difficult to obtain and need not prejudice the status of the midwife. Between 12 and 34 weeks the antenatal examinations can well be conducted by the midwife. The doctor will want to check up at about 34 and 38 weeks.

By now the patient knows her midwife and doctor, which should lead to an easy, fear-free labour. The midwife can conduct the confinement, using effective analgesics under medical supervision. The primipara will appreciate the more effective anaesthesia that the G.P. can give if he can be present at the actual delivery. If the confinement is to be in hospital the G.P. can do the antenatal examinations just as well as the clinic doctor or midwife, and an extra authority is left out. Liaison between the G.P. and the hospital is surely best brought about by postgraduate courses given by the local hospital specialists to the G.P.s in their area. It is an excellent way, which leads to the difficulties of each side being appreciated by the other.

In contrast to this simple system, the mother attending the clinic sees (1) her G.P. at the onset and again whenever in trouble; (2) the clinic doctor and midwife for antenatal care; (3) the hospital doctor and midwives (often complete strangers) for delivery; and (4) yet another doctor for clinic infant welfare. Can this ever be economical or efficient? Can a personal interest in the patient be maintained?

I do regret that specialists in authority now seem to encourage expectant mothers to leave their G.P.s and attend clinics and hospitals. If the G.P. is inefficient it is the fault of his teachers and lack of postgraduate education. It would be better to remedy this than take midwifery out of the G.P.'s hands. It is not surprising that all young doctors and medical students now want to train as specialists. This trend will continue if the G.P. is not trusted and if the most important and interesting event of the family's life is taken out of his hands.—I am, etc..

London, E.4. JOAN WAGSTAFF.

SIR,—In assessing Professor J. Young's (February 18, p. 392) comprehensive treatise on maternity and the N.H.S., it is as well to bear in mind two things: that Professor Young is an eminent obstetric specialist who is necessarily somewhat out of touch with G.P.–midwife relationship in lower-class domiciliary and cottage-hospital practice, and, secondly, that his words were originally uttered for the benefit of the Royal College of Midwives. In view of this one may gloss over his distorted summing-up of this most important relationship as it now is under the N.H.S. At the same time there would appear to be several important factors which the professor has not mentioned.

1. The days when a family doctor applied forceps simply because he was in a hurry are practically past. To-day obstetric committees in every executive-council area have formulated criteria which have to be fulfilled before any new G.P. becomes a general-practitioner obstetrician and is added to the obstetric list, entitling him to be paid at the higher rate. In a relatively short time the effect will be that the number of G.P.s engaged in midwifery will be less, but that these "G.P.O.s" will be those keen enough on obstetrics to have taken additional postgraduate qualifications or to have gained special experience in the subject. These men will gradually take on more obstetric responsibility, and will among other things be running (with the local midwives) the local antenatal clinics, many of which have been run up to now by stopgaps, styled by the professor "clinic officers"—so often bereft of direct responsibility and effective powers, and not surprisingly devoid of interest.

2. The operative unit in domiciliary and cottage-hospital midwifery is the G.P.O.–midwife team of two, and the sooner the R.C.O.G. and the R.C.M. realize that this team unit is indivisible the better will the wheels run. It is absurd to suggest that either half of the team can engage in efficient large-scale midwifery without the other. Most of the doctors and midwives

know this to be a basic truth; the only people who do not are the ones trying to run the maternity service from the top.

3. The perpetuating of the paper distinction between "maternity" and "midwifery" cases by those in authority is one of the chief factors in fostering disharmony and petty rivalry. When will it be accepted once and for all that an obstetric case is an obstetric case, and that when it takes place in the home or in the cottage hospital it is the joint responsibility of the inseparable G.P.O.–midwife team unit? No knowledgeable person, and I am sure not Professor Young, would deny that good antenatal care (with at least six examinations and not only the two statutory ones) is of far more importance than the nice point about exactly whose hands they were which guided the presenting part in the much overrated act of birth. I repeat, the whole case from the first antenatal to the last postnatal examination is unquestionably a team job. To suggest that anyone wishes to "degrade the midwife to the status of the maternity nurse and rob her of the independence in her own sphere" is not only untrue except in very isolated cases, but, coming as it does from high quarters, is the kind of catch phrase that may well keep old wounds from healing and the maternity service from working smoothly at the periphery where most of the work is carried out.

4. The vision of normal cases demanding (and getting) the unnecessary attendance of their G.P.O. at their uncomplicated confinement is as unreal as it is amusing. The knowledge that the midwife is fully competent and nearly always now armed with a Minnitt's apparatus, coupled with the assurance that the other half of the team is available should circumstances warrant his assistance, gives complete confidence, in my experience, to 99 mothers out of every 100.

5. The G.P.O. is the very first to recognize that in the realm of uncomplicated midwifery the good midwife has no peer. Also, it would be a physical impossibility for him to attend the births of every case for whom he had signed an E.C.24, as he would probably be working not with one midwife but with several. I work with six, and since the Act came in have attended between one in four and one in five cases. Some of these have been normal and have been delivered by my team mate while I have been giving a little gratuitous analgesia the other end. I like doing this now and again, as I am anxious not to forget what a normal birth looks like, and I have found that one can learn a great deal by watching—even by watching midwives.—I am, etc.,

Hambleden, Bucks. JOHN ELLIOTT.

Analgesia in Childbirth

SIR,—During the past four years pethidine, either alone or in conjunction with scopolamine, has been used extensively for the relief of pain in childbirth in the obstetric department of the Postgraduate Medical School, to which I am attached as anaesthetist. After an experience with well over 3,000 cases there does not appear to be any reason why it should be discontinued. I cannot help thinking that abandonment of the use of pethidine because of a high incidence of foetal respiratory depression points to some misuse of the drug.

I agree with Dr. Shila G. Ransom (February 18, p. 435) that the interval between the uterine contractions may be lengthened after injection of pethidine, but this delay is exhibited only in the two to three contractions that follow the onset of action of the drug. The rhythm is soon re-established. This is shown quite definitely on kymograph recordings taken before, during, and after intravenous administration of pethidine and scopolamine.

Dr. Ransom also mentions that pethidine may inhibit contractions that are weak and will delay labour if given too early. I have found this to be so. But why give pethidine in these cases? Midwives are taught that during the early part of labour patients should be kept as active as conditions permit, and that they should be encouraged to take light diet and to drink as much as possible. How are they to do these things if attempts are made to lay the patients low with analgesic drugs? Let us withhold our more powerful weapons until they are needed—that is to say, until labour is well established and the contractions are strong enough to cause real discomfort.

I make an earnest plea that pethidine should not be dismissed as a drug that diminishes uterine contractions and causes depression of respiration in the infant. It is a valuable analgesic for use in obstetrics. I think it should be appreciated by everyone that whenever we use pain-relieving drugs it is essential that we should increase our vigilance. But is this too great a price to pay for the relief of pain in childbirth?—I am, etc.,

London, W.12. HILDA ROBERTS

Birth Control

SIR,—In the recently published report on family limitation[1] prepared for the Royal Commission on Population by the Royal College of Obstetricians and Gynaecologists it was stated that 23% of all children born to parents who practised birth control were unplanned. This is a high failure rate. The experience of family planning clinics is that the "unaccountable" (and possibly inevitable) failure rate is from 1% to 3%. Medical advice on methods best suited to the individual case and educational propaganda are essential before the recommendation of the Royal Commission that "public policy should assume and seek to encourage the spread of voluntary parenthood" can be fulfilled.

It is a great pity that the investigation carried out by the Royal College did not cover larger numbers. Only 3,120 out of the thirteen and a half million women who married between 1910 and 1947 are included. Even these are not representative, since 64% came from London and Glasgow and there was admittedly "a greater proportion of the less well-to-do sections of the population." In addition to the questionaries on which the report is based, about 7,000 were completed from a "maternity" group, general practice contacts, etc. Had these been included the survey would have been far more comprehensive and some valuable data about women in the present child-bearing group would have been obtained.—I am, etc.,

London, S.W.1. M. A. PYKE,
Hon. Secretary,
The Family Planning Association.

REFERENCE

[1] Papers on the Royal Commission on Population, Vol. 1. *Family Limitation and its Influence on Human Fertility During the Past Fifty Years*, 1949, London: H.M.S.O.

The Surgery of Childhood

SIR,—The National Health Service offers us the opportunity—indeed sets the challenge—to improve the general surgical services for children. It is important that the magnitude of this opportunity should be realized, and I feel it to be the duty of those surgeons whose special experience fits them to discern the true surgical needs of the child community to express their views.

The age group—birth to puberty—is in a special category in a surgical sense, with requirements all its own, requirements which must be met if surgery is to give of its best to our children. It is true to say that some of these requirements, which are indeed fundamental, are common to all "paediatrics"—the protection of children and especially of infants from intercurrent infection, matters of feeding, nursing, and general management. But the provision of these elementary essentials is very far from meeting the full surgical needs of children.

The paramount importance of the physician in paediatrics, which we would all gratefully acknowledge, has tended to obscure the role of the surgeon in the prevention, diagnosis, and treatment of disease in the young, but it would be a sad mistake if, in planning the paediatric services of the future, in particular those aspects which are essentially surgical, the collaboration of surgeons with appropriate experience was not given due consideration.

The first essential is for some clear thinking. It will not be enough to fashion yet another "close" specialty, "paediatric surgery," and to attempt the sort of segregation this would imply. There are cogent reasons which make this impracticable, even if it were desirable.

(1) For reasons of geography and urgency much of the surgery of childhood will of necessity continue in the hands of surgeons whose main work is with adults.

(2) Specialization in surgery has so far evolved by systems and not by age groups. The various accepted specialties—orthopaedic, thoracic, otorhinological, plastic, and so on—will continue to have their quota of child patients, which possibly is as it should be, with one vital proviso—namely, that the essential needs of the child as a surgical subject are appreciated and catered for by all.

(3) No individual "paediatric surgeon" could hope to command all the specialties. There must come further specialists within a specialty—very literally "more and more about less and less," with very likely the further decay of common sense and sound judgment.

What then should be the aims of policy? We must of course have the big paediatric centres for specialist work, research, and education, and these certainly offer scope for some purely paediatric surgeons and associate specialists. At the periphery and under the surveillance of the parent centre there is need of sub-units with the requisite paediatric facilities—nursing, equipment, and so on—staffed by surgeons not necessarily paediatric specialists but with adequate training in children's surgery. All this is obvious enough, but in my judgment the greatest need of all is educational, for without a wide knowledge of the surgical aspects of paediatrics among general practitioners, nurses, surgeons, and even, I venture to say, paediatric physicians the most careful of plans will fail to achieve what we would all wish from them.

How is this to be most effectively achieved? I venture to make some suggestions, based in part on a long and varied experience as an examiner of candidates for qualification and for the higher diplomas, as well as nurses. This experience has shown me that, so far as the surgical needs of childhood are concerned, the teaching and training of our students and postgraduates and, to a less extent, of our nurses is lamentably short of what it might and should be. In all forms of practice the importance of a familiarity with the surgical problems of childhood is far from being sufficiently appreciated. In consequence, children all too often suffer sadly from ignorance, ineptitude, and mismanagement.

Students.—Any real advance must begin at the foundation with the student. I know only too well that our poor students are already overburdened. Indeed it seems to me high time that a more rational view were taken of the essential aim of the medical student's course. That, however, is another question. But in any fair perspective of practice in general, which presumably is what the student is being trained for, children loom large. Paediatrics, quite rightly, has now taken a more prominent place in the curriculum, but my point now is that surgical paediatrics have not as yet done so, and it is fundamental that they should. I am not suggesting that the student should be burdened with a whole lot more specialized facts but that he should be given an adequate insight into the handling of children as surgical patients and into such of the common surgical problems as he will at once meet in practice. No doubt I shall be told that this is being done. I can only say that, with all due respect, I do not agree.

Higher Qualifications.—F.R.C.S. If it be conceded, as I think it must, that much children's surgery will continue in the hands of those who may be called adult surgeons, then I feel it to be essential that the importance of the special needs of this age group, birth to puberty, should be emphasized. I am happy to know that the Council of our College has long had this in mind. It would, I believe, be a great blessing to children if every candidate for the Fellowship had been given the opportunity of a resident post in a recognized paediatric centre, and I hope this will be a definite objective in the future. Apart from the value to children, there could be no better training for the young surgeon in clinical observation and delicacy of technique.

"Paediatricians."—By which I mean "medical paediatricians." It is perhaps most important of all to dissolve the old traditional and very artificial distinction between physician and surgeon. In no branch of surgery is it more true than in this, that the surgeon is "a physician condemned to the practice of surgery." And the converse is true also. Every paediatric physician should be something of a "children's surgeon," or at least should know a good deal more about it than he or she often does now. I am entirely in accord with those who feel that posts for trainees in children's units should be mixed or interchangeable as may best suit local hospital requirements.

It seems to me important to step up the surgical requirements of candidates for the D.C.H.

Nurses.—This touches the basic need of all children's surgery, for the nursing required is specialized to a very high degree indeed. No care or consideration is too great to give to the training of our surgical children's nurses. It is not enough to leave this to our registrars. To my mind it is the duty of those of us who are older and more experienced to guide and help our sister tutors as actively as we possibly can in their vitally important work.

Surgery in childhood has advanced as notably as in any other field in the past 50 years, though in England this progress has received scanty recognition. What matters now is that the basis of this achievement should be broadened with clarity of vision and understanding for the benefit of children everywhere —I am, etc.,

London, N.W.3. T. T. HIGGINS.

Mitral Stenosis in Later Life

SIR,—Your annotation on this subject (February 4, p. 295) is timely, as mitral stenosis in later life is not so rare as is commonly believed. It is difficult to diagnose because of the absence of some of the signs and symptoms usually associated with mitral stenosis. The following case is worth recording because of several interesting features.

A man aged 59 was admitted to hospital on November 8, 1949, for treatment on account of a psychiatric condition—namely, anxiety state with depression. He complained of feeling weak and tired, inability to stand, mistiness of vision, and indigestion. He felt his heart was "erratic, irregular, and jumpy—like a Rugby football being kicked about." He had also suffered from psoriasis all his life. There was no history of rheumatic fever or chorea and he had served in the first world war, having been wounded in action. He was apparently told he had slight "V.D.H." or "D.A.H.," but after demobilization he worked as a cutter in the boot and shoe trade and did not lose any time from work on account of symptoms. About 1940 he had an attack of bronchitis, when his doctor told him "his heart was bad" and advised light work. Since about 1945 he has complained of his heart "racing," and during the last two and a half years he has been off work on account of anxiety symptoms.

On admission to hospital he was an undersized, slim person of poor physique with a deformed chest. He had extensive psoriasis on the scalp, face, trunk, elbows, and knees. He had neither malar flush, clubbing of the fingers, nor swelling of the ankles. No physical signs or symptoms of cardiac failure were present, and he had no dyspnoea even after exertion. His arteries were soft and easily compressed. pulse irregular, fibrillating, and rate 70 per minute. The apex beat was diffuse in the fifth-sixth interspace, 3½ in. (8.75 cm.) from the midsternal line. There was a diastolic thrill. Percussion revealed that the transverse diameter of the heart was probably enlarged. At the apex the first sound was accentuated, and there was a soft diastolic murmur. Absence of a presystolic murmur was due to auricular fibrillation. The blood pressure was 160/100 mm. Hg. Apart from extensive psoriasis all other organs and systems were normal. The Wassermann reaction was negative. The sedimentation rate was 8 mm. in one hour and 24 mm. in two hours. Blood counts were within normal limits. Radiograph of chest: "Calcified primary complex in left upper zone. No gross cardiac enlargement. No cardiac decompensation evident." The diagnosis of mitral stenosis with auricular fibrillation was confirmed at the cardiac department of the London Hospital.

The interesting features about this patient were (*a*) absence of a history of rheumatic fever, (*b*) valvular disease of the heart first spotted in adult life, with over thirty years' freedom from symptoms of congestive failure, (*c*) onset of auricular fibrillation at the age of 55, (*d*) absence of clinical and radiological evidence of decompensation, (*e*) lifelong duration of extensive psoriasis, and (*f*) the possibility that mitral stenosis helped him to ward off pulmonary tuberculosis, which is not uncommon among workers in the boot and shoe trade.—I am, etc.,

Sutton, Surrey. M. N. PAI.

SIR,—With reference to the annotation on mitral stenosis in later life (February 4, p. 295), I should like to point out a case in which the diagnosis was made at necropsy. This was a woman aged 99 years and 11 months who died at St. John's Hospital, Battersea, last year. I also have particulars of another woman aged 90 and several subjects in the later eighties. My experience makes me feel that mitral stenosis among the very old is not quite so rare as usually considered.—I am, etc.,

London, S.W.16. TREVOR H. HOWELL.

Sadism on the Screen

SIR,—Is it not time that psychiatrists made a protest regarding the diet of sadism which forms such a large part of to-day's films? This was once inserted cunningly without attention being drawn to it, but is now put forward as a major attraction. Recently, for example, I saw a "trailer" advertising the next week's films which stated that it showed "exquisite cruelty in kid gloves." Surely no normal person wishes to see the depiction of exquisite cruelty no matter how garbed.

The result of this reiterated sadism is that young people grow up with a fantasy life of violence. The consequence is that in some cases, sooner or later, the fantasy is translated into action, and when the young man wants some money he "coshes" some old lady and takes her handbag. The fact that these youths obtain their ideas from the films is easily proved by the fact that they use American gangsters' slang ("I'll take the rap," etc.). Is it surprising, therefore, that offences of violence against the person have increased from 1,583 in 1938 to 2,459 in 1945? In 1948 arrests for indictable crimes by offenders under 21 totalled 11,656. In the ages between 17 and 20 they have increased by 40% and they are still rising.

Nothing is easier than writing and filming violence, and this has been fostered to some extent by the grandmotherly Hays Office, which makes everything (except violence) subject to the censor. But surely we should adopt a different point of view and make the producers realize that we regard cruelty and sadism as much more undesirable than, for example, the Restoration clothes which were cut in a recent British film in America. The gangster is a coward at the safe end of a gun, and it is time the film producers gave up glorifying him.—I am, etc.,

London, W.1. CLIFFORD ALLEN.

POINTS FROM LETTERS

Foreign Body in the Leg

Dr. R. BOWESMAN (Billericay, Essex) writes: I was recently called to a patient who, the day before, had been walking on a country footpath and felt a sharp pain below the knee. She felt somewhat faint and, on looking at the leg, found it was bleeding. It was also very painful. On examination there was a small punctured wound on the inner side of the left calf, just behind the subcutaneous border of the tibia, 3 in. (7.5 cm.) below the knee-joint. It was apparent that a foreign body was present. I made a half-inch incision under local procaine, and with artery forceps pulled out 3 inches of hexagonal-sectioned lead pencil. The patient made an uninterrupted recovery, having had 1,000 units of A.T.S. and 200,000 units of penicillin daily for three days. Where the pencil came from and what produced the force sufficient to embed it beneath the skin seem at present impossible to explain, as the patient is not aware that she was carrying any pencil on her person.

Primary Atypical Pneumonia

Dr. ALEXANDER FERENCZI (Csorna, Hungary) writes: Dr. J. G. Scadding (November 26, 1949, p. 1225) mentions in his article on the management of acute pneumonias in adults that virus pneumonias (primary atypical pneumonia) do not respond to sulphonamides or penicillin. Prior to the epoch of sulphonamides and penicillin I used to treat the pneumonias with quinine hydrochloride, giving it by mouth and by intramuscular injections (1–1.5 g. daily). The results were good. Later I also noticed that both sulphonamides and penicillin were not effective against the virus pneumonias, and in these cases I have tried the quinine treatment again with very good results (*Schweiz. med. Wschr.*, 1949, **79**, 171). Later other authors also reported similar observations.

Health and the Soil

Dr. EVA HILL (Auckland, New Zealand) writes: Dr. G. T. Wrench's letter (November 19, 1949, p. 1178) is the most important letter printed in the *Journal* for many months. Yet it is amazing (or is it?) that it has caused no comment. With the rapidly rising costs of health services and increasing need for further hospital accommodation in all countries, it is extraordinary that the medical profession as a whole does not follow Dr. Wrench's lead and turn to the study of health—its promotion and preservation—rather than as at present concentrate on disease and its treatment. Until the profession ceases its intensive study of disease and never-ending search for viruses and vaccines and turns its attention to the health of the soil (on which our human health depends) all the National Health Service hospital facilities will not improve the health of the nation.

Obituary

GEORGE R. MINOT, M.D., F.R.C.P.

We announce with regret the death on February 25 of Dr. George R. Minot, who was professor of medicine at Harvard Medical School for 20 years. Dr. Minot was awarded a Nobel Prize in 1934 for his outstanding work on pernicious anaemia.

George Richards Minot was born in Boston, Massachusetts, on December 2, 1885. He studied medicine at the Harvard Medical School, where he took his A.B. in 1908 and graduated M.D. in 1912. He had a year as medical house-officer at the Massachusetts General Hospital and then went to the Johns Hopkins Hospital, where he was assistant resident physician and later an assistant in medicine and research fellow in physiology. At Harvard also he was an assistant in chemistry for a year and then an assistant in medicine, again at the Massachusetts General Hospital. He became assistant professor of medicine at the Harvard Medical School in 1918, and by this time, too, he had a number of other appointments. He was physician to the Collis P. Huntington Memorial Hospital and visiting physician to St. Luke's Convalescent Home. In 1923 Dr. Minot was appointed chief of the medical service of the Collis P. Huntington Memorial Hospital, and he was in charge of a special clinic at the Massachusetts General Hospital. The title of "Special Consultant in Diseases of the Blood" was given to him in 1925, and two years later he was made clinical professor of medicine at Harvard Medical School. In 1928 he was appointed professor of medicine at Harvard and director of the University's medical laboratory. Dr. Minot also held appointments at the Thorndike Memorial Laboratory, the Boston City Hospital, and the Peter Bent Brigham Hospital.

From an early stage in his career Dr. Minot had interested himself particularly in the investigation of diseases of the blood. It was in 1925 that Robscheit-Robbins and Whipple showed the beneficial effect of raw beef liver on blood regeneration in cases of anaemia. A year later there followed the historic demonstration by Minot and Murphy of the specific effect of liver in the treatment of pernicious anaemia. Minot was for long the leader of the Boston school of haematologists, but there is no doubt that his greatest achievement was his share in this discovery. When Minot and Murphy first published their findings they were prescribing half a pound of liver a day. There followed the work of W. B. Castle and many more years of intensive research, in which Minot played an important part, culminating recently in the isolation in this country and in America of vitamin B_{12}. To-day the effects that Minot achieved with half a pound of liver can be brought about by the administration of a few millionths of a gramme of this vitamin. The outstanding therapeutic discovery of 1926 had wider implications. From then onwards haematology was no longer a laboratory exercise:

it became an essential bedside procedure for the accurate diagnosis of pernicious anaemia and for measuring and controlling the effects of treatment.

George Minot was a Fellow of the American College of Physicians, of the American Philosophical Society, and of the American Medical Association. In 1938 he was president of the Association of American Physicians. He received many honours from his own and other countries. The Royal College of Physicians awarded him the Moxon Medal in 1933 and made him an honorary fellow in 1938. The Edinburgh College elected him to honorary fellowship as early as 1931, and the Royal Society of Medicine honoured him in the same way a year later. Similar compliments came his way from Belgium, India, Finland, and other countries. Apart from his Nobel Prize, which he received jointly with W. P. Murphy and with George H. Whipple in 1934, he was awarded the Kober gold medal of the Association of American Physicians, the Charles Mickle Fellowship of the University of Toronto, and the Cameron Prize of the University of Edinburgh. In 1945, on the occasion of his sixtieth birthday, he was given a dinner by many of his colleagues, who conceived then the idea of preparing an anniversary volume of manuscripts to be published in his honour. The January, 1948, issue of *Blood*, in which the first of these papers appeared, opened inevitably with a reprint of the contribution by Minot and Murphy to the *Journal of the American Medical Association* of August 14, 1926. As recently as last year the Council of the B.M.A. elected Dr. Minot a Foreign Corresponding Member of the Association. Dr. Minot was married in 1915 and had one son and two daughters.

Dr. R. D. Lawrence writes: The news of George R. Minot's death at the age of 64 brings to mind the conquest of pernicious anaemia which, following soon on the discovery of insulin, made the decade 1920–30 so stimulating with the discovery of new vital treatments by hormones and catalysts. Minot was born into, and brought up in, the academical circles of Boston and Harvard medical schools. From early days he was interested in blood diseases, and his despair and sympathy for his Addisonian patients were the stimulus for his unique investigations. When severe diabetes struck him in 1921, perhaps it was an ultimate blessing, because it turned his mind to diet details and rigid observation in his struggle for survival. When restored to strength by insulin his widely studious mind was led to the idea, more by empiricism than by hypothetical reasoning, that liver might be useful in pernicious anaemia. With immense caution and critical enthusiasm he proved that this was so, first on private patients, and then in the Peter Bent Brigham Hospital between 1923 and 1926, aided by Murphy. At last he was sure, and he convinced the world. Soon team-work provided complete proof, and managed to make palatable and, later, injectable extracts. Honours from every country flowed on Minot and culminated in the Nobel Prize, which he shared with Murphy and Whipple. He remained, like most great scientists, friendly, unspoiled, and modest. For many years he was an outstanding figure in Boston and in American medical life, always overtaxing his strength with his work as professor of medicine, in teaching and education, in research, and in writing. His life was a great example of the conquest of mind and the spirit over the body. For this as well as for his great achievements he will long be honoured and mourned.

Professor L. S. P. Davidson writes: When I visited George Minot in his delightful home in Boston at the end of June, 1949, it was obvious that his health had gravely deteriorated. I was therefore not surprised when I received a cable from Mrs. Minot announcing his death. In every country in the world haematologists will mourn the passing of one who has done so much to advance knowledge in diseases of the blood. Young graduates of every nationality journey to Boston to obtain the training and mental stimulation which were inseparable from an association with Minot. Many of his friends, both young and old, will remember him not only for his distinction as a physician and a research worker but for those human qualities of modesty, courtesy, and kindliness with which he was so richly endowed. His home in Boston became a "home-from-home" to many generations of overseas students, who, I feel sure, will wish to send their deepest sympathy to Mrs. Minot in the tragic loss of her distinguished husband.

S. E. WHITNALL, M.D., F.R.S.C.

Professor S. E. Whitnall, who died at Oxford on February 19 at the age of 78, was professor of anatomy at McGill University, Montreal, from 1919 to 1934, and at the University of Bristol from 1935 to 1941.

Samuel Ernest Whitnall was born at Flixton, near Manchester, and educated at Radley College, Berkshire, Owens College, Manchester, and Magdalen College, Oxford. He received his clinical training at St. Thomas's Hospital, qualifying in 1908. He won the Welch Memorial Prize in 1904 and graduated M.A. in 1908, proceeding M.D. a year later. He went on to win the Radcliffe Prize for medical research in 1913. He was university demonstrator of human anatomy at Oxford up to the outbreak of the 1914–18 war. In the course of his war service as a captain, R.A.M.C., Whitnall was a junior surgeon at the 3rd Southern General Hospital. He then spent nearly three years in France as a regimental medical officer with the Oxford Hussars, being posted later to the 2nd Cavalry Field Ambulance. After the war he was appointed to the Robert Reford professorship of anatomy at McGill University, and remained there for 15 years before accepting the chair at Bristol.

Professor Whitnall had always been particularly interested in ophthalmological anatomy, and he was the author of a monograph on the anatomy of the human orbit. He wrote many other papers on this subject, and his contributions in this field were recognized in 1923 by the award of the Nettleship Prize. He published in that same year one general work, *The Study of Anatomy*. His recreations were shooting and golf, and he married Zoë, the daughter of the late C. C. Wylie; they had two sons and a daughter.

Dr. ARTHUR CROFTS DE BEETHAM HELME, who was well known to many active members of the British Medical Association, died on February 15 at the early age of 49, after a long and painful illness, bravely borne. Born in Manchester, he was the son of the late Dr. J. Arthur Helme and a cousin of the late Mr. J. E. H. Roberts. He was educated at Rugby, Trinity College, Cambridge, and St. Bartholomew's Hospital, and he qualified in 1926. He graduated M.B., B.Ch. in 1934, and took the diploma in tropical medicine and hygiene in the same year. Helme was wedded to the best traditions of the profession and prepared to fight for them. He will be remembered by many of his colleagues for his courageous resistance to the introduction of the National Health Service Act. A good public speaker, he represented the Guildford Division of the B.M.A. from 1943 to 1948. He had been chairman of the Division in 1945–6, honorary secretary of the Surrey Branch in 1944–5, and a member of the Agenda Committee of the Representative Body. Helme's career was varied. After holding resident appointments at Buxton and at Plaistow he served with the P. and O. Steamship Company for several years. He was then in the Colonial Medical Service in East Africa for three years.

For a while he worked under the Port of London Authority, and in 1939 he was appointed a medical officer at the Ministry of Pensions. In 1944 he went into private practice in the City of London. Helme did not enjoy robust health, but in spite of this he always gave generously of himself for any cause in which he believed. A colourful and strong character, he had travelled widely and his interests were many and varied. He was held in high esteem by his colleagues in Surrey and London, and his premature death will be deeply regretted. He leaves a widow and an adopted daughter.—J. O. M. R.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

H. E. Lockhart-Mummery has been approved at the examination for the degree of M.Chir.

UNIVERSITY OF LONDON

At a meeting of Convocation on January 21 Desmond Kyran Mulvany, M.S., F.R.C.S., and Napier Arnold Thorne, M.B., B.S., were elected to the Standing Committee of Convocation for a period of three years.

The Royal Veterinary College has been admitted as a School of the University in the Faculty of Medicine for five years in the first instance, from October 1, 1949.

The title of Professor Emeritus of Physiology in the University has been conferred on Hamilton Hartridge, M.D., Sc.D., M.R.C.P., F.R.S., who held the Chair of Physiology at St. Bartholomew's Hospital Medical College from 1927 to 1947.

The title of Professor Emeritus of Physics in the University has been conferred on E. N. da C. Andrade, D.Sc., Ph.D., F.R.S., who held the Quain Chair of Physics at University College from 1928 to 1949.

Albert Edward William Miles, M.R.C.S., L.R.C.P., F.D.S. R.C.S., has been appointed to the University Chair of Dental Pathology tenable at the London Hospital Medical College, from January 1.

Donald Darnley Reid, M.D., Ph.D., has been appointed to the University Readership in Epidemiology and Vital Statistics tenable at the London School of Hygiene and Tropical Medicine from January 1.

EPIDEMIOLOGICAL NOTES

Poliomyelitis in Scotland in 1947

Dr. Ian Sutherland, of the Department of Health for Scotland, has prepared a detailed report on poliomyelitis in Scotland in 1947. The report is based on an analysis of individual records supplied by the medical officers of health in Scotland for every case notified in the period June 1, 1947, to January 3, 1948. From these records it has been possible not only to study the age and sex incidence of the disease and its distribution in space and time but also to classify cases according to their severity and to examine the problem of association of incidence with housing and other social conditions. In all 2,002 cases, equivalent to a rate of 3.19 per 10,000 living, were included in the survey; 162 (8.09%) were fatal. In England and Wales there were 7,766 notifications in 1947 with 707 deaths, the attack rate being 1.8 per 10,000 living and the case fatality rate 9.1%. Thus incidence in Scotland was substantially higher than in England and Wales and case fatality was slightly lower. The age distribution of cases tended to be lower in Scotland than in England and Wales, as is shown in the following table.

	Under 1	1–4	5–14	15–	Unstated	All Ages
Scotland	6·5%	35·8%	34·6%	23·1%	0	100
England and Wales (whole year)	3·9%	26·9%	35·0%	33·4%	0·8%	100

The report contains a wealth of information on geographical distribution, types of case, incidence in different social classes, and so on, and it will be of great interest to students of the disease for comparison with other epidemics. It contains few conclusions, and the author suggests, very rightly, that over-simplification of conclusions is one of the common pitfalls to be avoided in the reporting of epidemics of poliomyelitis.

Discussion of Table

In *England and Wales* infectious diseases were more prevalent during the week, and there were increases in the notifications of measles 721, dysentery 108, whooping-cough 69, and acute pneumonia 41. There was a fall in the incidence of scarlet fever 27.

The largest rises in the notifications of measles were Norfolk 174 and Lancashire 145. Measles has only been prevalent during the past few weeks in a few counties. During the week under review almost two-thirds of the cases were notified in five counties: Lancashire 775, Norfolk 769, Suffolk 402, Durham 360, and Staffordshire 327.

An increase of 32 in the notifications of whooping-cough in Lancashire was recorded. The largest decrease in the incidence of scarlet fever was Lancashire 59, and the largest increase Middlesex 32. In the notifications of diphtheria there was a decrease of 5 in London.

The rise in the incidence of dysentery was mainly contributed by Lancashire and Yorkshire West Riding. The largest returns during the week were: Lancashire 103 (Manchester C.B. 47, St. Helens C.B. 23, Lancaster M.B. 14); Yorkshire West Riding 78 (Leeds C.B. 48, Sheffield C.B. 12, Shipley R.D. 11); Durham 20 (South Shields C.B. 7); Nottinghamshire 20 (Nottingham C.B. 20); Glamorganshire 20 (Cardiff C.B. 10, Cardiff R.D. 10); Cheshire 16 (Birkenhead C.B. 15); Northumberland 15 (Newcastle-upon-Tyne C.B. 13); and London 10.

In *Scotland* there were increases in the notifications of whooping-cough 48, acute primary pneumonia 40, and measles 13, with decreases in the incidence of scarlet fever 25 and dysentery 22. The largest returns for dysentery were Dundee 13 and Glasgow 12. The rise in the incidence of measles was contributed by Glasgow and the decline in scarlet fever by the western area. Of the 24 cases of diphtheria 13 were notified in Glasgow.

In *Eire* there was an increase of 29 in the notifications of scarlet fever. This rise was mainly confined to Dublin C.B. The largest fresh outbreaks during the week were 15 cases of measles in Kilkenny, Waterford No. 2 R.D., and 12 cases of whooping-cough in Dublin, Dublin South R.D.

In *Northern Ireland* the notifications of measles increased by 86, and there was a decrease in the incidence of scarlet fever 22. An increased incidence of measles was recorded throughout the country; in Belfast C.B. an increase of 45 was reported. The notifications of scarlet fever fell by 31 in Belfast C.B., and a rise of 16 occurred in County Antrim.

Quarterly Returns for Eire

During the September quarter of 1949 the birth rate at 22.1 per 1,000 was 0.2 above the rate for the third quarter of 1948. Infant mortality was 44 per 1,000 births and was 6 above the rate for the preceding September quarter. The crude death rate was 10.8 per 1,000 and was 0.3 above the rate for the preceding third quarter. The 201 deaths attributed to the principal infectious diseases included 160 from diarrhoea and enteritis, 18 from whooping-cough, and 10 from measles. Deaths from respiratory tuberculosis numbered 463, and there were 139 deaths from other forms of tuberculosis. These figures were 49 and 28 respectively below the totals for the preceding September quarter.

Week Ending February 18

Notifications of infectious diseases in England and Wales during the week included: scarlet fever 2,130, whooping-cough 1,652, diphtheria 80, measles 4,526, acute pneumonia 1,189, acute poliomyelitis 39, dysentery 344, paratyphoid fever 6, typhoid fever 10. Deaths from influenza in the great towns numbered 76.

Correction.—In the Epidemiological Notes in the *Journal* of February 25 (p. 497) Wigan R.D. was said to have had 28 cases of dysentery notified during the week ended February 4. No cases of infectious disease were notified during that week in Wigan R.D., and the 28 cases of dysentery were actually notified in Whiston R.D.

No. 6

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended February 11.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1950 (a)	(b)	(c)	(d)	(e)	1949 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Meningococcal infection	59	3	17	5	1	32	1	22	—	1
Deaths		2	—				—	—		
Diphtheria	71	6	24	6	5	116	10	35	10	3
Deaths	1	—	—	1	—	—	—	—	—	—
Dysentery	325	10	42	—	—	75	8	22	—	2
Deaths				—	—				—	—
Encephalitis, acute	4	1	1	—	—	—	—	—	—	—
Deaths		—					—			
Erysipelas			29	12	7			39	3	8
Deaths										
Infective enteritis or diarrhoea under 2 years				23					48	
Deaths	8		6	1	3	35		3	4	1
Measles*	4,251	38	75	76	346	13,800	496	142	100	178
Deaths†			—	—	—			—	2	—
Ophthalmia neonatorum	34	1	5	—	—	39	3	7	—	—
Deaths										
Paratyphoid fever	6	3	—	—	—	4	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal	1,228	71	36	—	18	1,016	59	20	11	17
Deaths (from influenza)‡	80	11	8	2	1	64	13	16	—	2
Pneumonia, primary			368	¶				426	33	
Deaths	378	73		12	12	311	70		13	12
Poliomyelitis, acute	37	3	—	8	1	10	—	1	1	—
Deaths§	4	—		—		1	—		—	
Puerperal fever		—	3				1	10		
Deaths										
Puerperal pyrexia‖	124	16	6		4	86	7	13	1	—
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,897	113	188	120	144	1,372	83	233	113	50
Deaths†			—	—	—			—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	3	—	—	2	—	6	—	—	1	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	1,657	72	368	49	65	3,168	176	185	57	84
Deaths	4	—	1	1	—	6	—	1	4	—
Deaths (0–1 year)	318	35	52	24	12	303	35	41	37	11
Deaths (excluding stillbirths)	6,537	1026	876	223	155	5,957	1063	780	205	132
Annual death rate (per 1,000 persons living)			17·6					15·6	12·7	
Live births	7,363	1191	902	288	255	7,292	1108	906	394	208
Annual rate per 1,000 persons living			18·1					18·2	24·4	
Stillbirths	183	33	22			195	24	25		
Rate per 1,000 total births (including stillborn)			24					27		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Deaths from measles and scarlet fever for England and Wales, London (administrative county), will no longer be published.

‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

§ The number of deaths from poliomyelitis and polio-encephalitis for England and Wales, London (administrative county), are combined.

‖ Includes puerperal fever for England and Wales and Eire.

¶ Primary pneumonia no longer notifiable in Eire.

Medical News

Rumania Leaves WHO

Rumania has sent a telegram to the Director-General of the World Health Organization announcing its withdrawal from WHO. Bulgaria, Soviet Russia, Ukraine, and Byelorussia have already left WHO.

Anaesthetist Lecturing in France

Dr. Bernard Johnson, vice-dean of the Faculty of Anaesthetists of the Royal College of Surgeons, went recently to France to give a course of five lectures (in French) to the medical faculties of the universities of Lyons and Paris and a shorter course to the medical faculty in Lille, in which he will describe the latest British advances in anaesthesia.

Promotion of Mental Health

At a small gathering of members of the executive board of the World Federation for Mental Health Dr. J. R. Rees spoke of the Federation's aim to promote positive mental health. He emphasized the importance of collaboration between members of the medical and other professions, including anthropologists, philosophers, and economists. Study groups had been set up in the universities of various countries. Dr. Rümke, of Utrecht, referred also to what he called the "multi-professional" approach, saying that it was the most important new development in the treatment of mental health.

Broadcasts on French Medicine

The following talks on recent advances in French medicine will be broadcast by Radiodiffusion Française from 7 p.m. to 10.15 p.m. (G.M.T.) on 206 m. (1,456 kilocycles). March 7: "The Surgical Forms," by Dr. J. Lenegre. March 14: "Endocrine Syndromes due to Latent Meningo-encephalitis," by Dr. Gilbert Dreyfus. March 21: "Replacement Transfusion in the Treatment of Anuria," by Dr. Paul Milliez. March 28: "A Broad Study of the Problem of Cancer," by Dr. Denoix. The writers of the talks will be pleased to answer any inquiries. Letters should be addressed to Radio Paris—Actualités Médicales, 118, Champs-Elysées, Paris.

Scholarships in Medical Science

Under the terms of a reciprocal arrangement with the Centre National de la Recherche Scientifique, the Medical Research Council invites applications from British workers in medical science, excluding clinical medicine, for two scholarships tenable at research institutions in France during the academic year 1950–1. The scheme is intended for young graduates in medicine or science who have already had some experience in a branch of medical science. Candidates must be of British nationality and have at least a working knowledge of French. The stipend of the scholarships will ordinarily be within the range of 30,000–60,000 francs a month, according to qualifications and experience, and married men will receive a supplementary allowance (payable in sterling by the M.R.C.); the grade appropriate to each individual will be decided by the C.N.R.S. in consultation with the M.R.C. Provision will also be made for travelling expenses to and from the place of work. Forms of application may be obtained from the secretary, Medical Research Council, 38, Old Queen Street, London, S.W.1, with whom applications must be lodged by March 31.

New Portuguese Journal

The first number of the *Revista da Associação Médica de Minas Gerais*, dated August, 1949, has been published under the editorial direction of Dr. Aulo Pinto Viegas. It includes original articles on pulmonary tuberculosis as a complication of diabetes mellitus, the bacteriological diagnosis of salmonella infections, erythrocyte sedimentation, and cysts of the lung. Four numbers will be published annually. It is published by the Associação Médica de Minas Gerais, which was founded in 1946. Correspondence should be addressed to Caixa Postal 260, Belo Horizonte, Minas Gerais, Brazil.

Welfare of the Aged

In many parts of the country statutory and voluntary bodies are co-operating to improve the welfare of old people. A circular from the Ministry of Health to medical officers of health indicates that the Minister would like to see this work developed further. The National Old People's Welfare Committee is encouraging the formation of a voluntary Old People's Welfare Committee in every local-government area, at first in the towns. The National Committee considers that the Local Committees should organize an effective voluntary home-visiting service, and co-ordinate their work with that of the various statutory agencies concerned, including the National Assistance Board and the appropriate local authority.

World Epidemiology

Among its many other activities for the control of epidemics the World Health Organization broadcasts daily bulletins giving epidemiological information. They include information on the occurrence of plague, cholera, yellow fever, smallpox, and typhus fever in seaports and airports, and on quarantine requirements imposed and withdrawn. Plans have been drawn up to hold field demonstrations in Egypt and Israel on new methods of rabies control. Dr. Etienne Berthet, of Grenoble, France, a consultant to WHO, has gone to Istanbul to help direct a new centre being set up for the teaching and training of tuberculosis control.

Chelsea Clinical Society

The fifth meeting of the session was held on February 14 at the South Kensington Hotel, with the president, Dr. Maurice Bewley, in the chair. Superintendent Cuthbert, of the C.I.D. Laboratories, opened a discussion on the medico-legal aspects of some recent cases, discussing more particularly the lines of scientific investigation now in use in this country. Specimens and slides were shown, and an interesting discussion followed.

Hospital Directory Amendments

The Ministry of Health has issued a list of amendments to its "Hospitals Directory for England and Wales."

Wills

Dr. William Stewart, of Denton, Lancs, left £94,339; Dr. Annette Matilda Benson, of Highgate, London, £4,959; Dr. James Rynd Briscoe, of Axminster, Devon, £33,998; Dr. James Andrew Gibson, of Lancaster, £11,753; and Dr. James Gilchrist, of Wraysbury, Bucks, £20,449.

COMING EVENTS

Institute of Ophthalmology

A series of senior-level lectures arranged for the spring term by the Institute of Ophthalmology (University of London), Judd Street, London, W.C., began on March 1, at 5.30 p.m. The lectures are open to all without fee, and details will be announced in the *Journal* under "Societies and Lectures" week by week.

British Medical Students Association

The following arrangements have been made for the week March 3–10. *Aberdeen.*—March 7 (Anatomical and Anthropological Society): Lecture by Professor V. C. Wynne-Edwards on "The District of McKenzie, N.W. Territories, Canada"; technicolour film show. March 7 (Medical Society): Lecture by Professor W. C. Wilson. *Belfast.*—March 3: Lecture by Mr. G. B. Hanna, K.C., on "Medico-legal Aspect of Medicine." March 10: B.M.A. Lecture by Mr. Dickson Wright. *Birmingham.*—March 7: Lecture by Dr. Sheldon on "Maternal Obesity." *Durham.*—March 3: Lecture by Professor Hume on "The Making of a Doctor." *Glasgow.*—March 2: B.M.A. Lecture by Sir Edward Mellanby, F.R.S. *Manchester.*—March 9: Lecture by Dr. Robert Forbes (Secretary, Medical Defence Union). *St. Andrews.*—March 3: Lecture by Dr. R. S. Paton. March 10: B.M.A. Lecture by Dr. W. N. Pickles.

Guy's Hospital Dental School

The annual clinical meeting of the Guy's Hospital Dental School will be held in the dental department of the hospital to-day (Saturday, March 4) and will include morning and afternoon sessions. Demonstrations of modern dental procedures will be given by members of the staff, and cases of clinical interest will be shown. Operations and demonstrations will be televised in colour as well as in the ordinary black-and-white.

Radiology Course

The Faculty of Radiologists will hold a postgraduate week-end course on March 18–19. Lecture demonstrations will be given on (1) diagnostic radiology and (2) radiotherapy. Full particulars may be obtained from the honorary secretary, Faculty of Radiologists, 45, Lincoln's Inn Fields, London, W.C.2.

Tuberculosis Conference

The British Tuberculosis Association will hold its Annual Conference at Oxford on March 22–25, the lectures being given at the Clarendon Laboratories. The following programme is arranged: *Wednesday, March 22.*—Afternoon: Opening Address by Dr. William Stobie; "Sarcoidosis," by Dr. S. Leitner; radiological demonstration of thymic enlargement in children, by Dr. F. H. Kemp. Evening: Special General Meeting. *Thursday, March 23.*—Morning: "The Nature of Drug-fastness," by Dr. E. P. Abraham; "Clinical Pathology and the Use of Streptomycin and P.A.S.," by Dr. E. Nassau; "The Use of Streptomycin and P.A.S. in Pulmonary Tuberculosis," by Dr. J. V. Hurford. Afternoon: "The Use of Streptomycin and P.A.S. in Pulmonary Tuberculosis," by Dr. T. A. W. Edwards; "Streptomycin and P.A.S. in the Surgery of Pulmonary Tuberculosis," by Mr. K. S. Mullard. Annual Meeting of the B.M.A. Tuberculosis Group. Evening: Lecture in Christ Church. *Friday, March 24.*—Morning: "Extrapleural Pneumothorax," by Mr. E. Torning; "Nutrition and Tuberculosis," by Dr. H. M. Sinclair; "The Trend of Tuberculosis in Holland," by Dr. L. H. A. Hoefnagels. Afternoon: Visits to Morris Works, Pressed Steel Works, Bodleian Library, etc. Golf Competition for the Fowler Cup. Evening: Annual Dinner. *Saturday, March 25.*—Morning: "Recent B.C.G. Work in the Field," by Drs. Carrol E. Palmer and I. C. Yuan; "Recent Work with the Vole Bacillus," by Dr. A. Q. Wells; B.C.G. Propaganda Films.

Mental Health

The National Association for Mental Health will hold a conference on "Mental Health and the Family" at Seymour Hall, Seymour Place, London, W.1, on March 23–24. Full information and tickets may be obtained from the Conference Secretary, 39, Queen Anne Street, London, W.1. The programme is as follows. *Thursday, March 23.*—10 a.m. to 12.30 p.m. Conference opened by the Archbishop of Canterbury. Discussion on "Social Health in the Twentieth Century," opened by Dr. J. L. Halliday, with Professor Alexander Kennedy in the chair. 2.30 p.m. to 5 p.m. Discussion on "Mental Health in Young Children," opened by Miss D. E. M. Gardner, with Professor Kennedy in the chair. *Friday, March 24.*—10 a.m. to 12.30 p.m. Discussion on "Education and Mental Health," opened by Dame Olive Wheeler, with Mrs. Madeleine Robinson in the chair. 2.30 p.m. to 5 p.m. Discussion on "The Assumption of Maturity," opened by Dr. R. Sessions Hodge, with Mrs. Madeleine Robinson in the chair.

SOCIETIES AND LECTURES

Monday

INSTITUTE OF UROLOGY.—At St. Paul's Hospital, Endell Street, London, W.C., March 6, 5 p.m., "*Acquired Fistula of the Bladder*," by Mr. F. R. Kilpatrick.

LONDON UNIVERSITY.—At University College (Eugenics Theatre), Gower Street, W.C., March 6, 5.30 p.m., "*Statistical Problems Connected with Medical Diagnosis*," by Professor Jerzy Neyman (University of California).

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W.—March 6, 8.30 p.m., "*Surgical Aspects of Hyperpiesia*," Third Lettsomian Lecture by Mr. A. Dickson Wright.

NATIONAL HOSPITAL, Queen Square, London, W.C.—March 6, 5 p.m., *"Formes cliniques actuelles des troubles extenso-progressifs d'origine traumatique et de nature réflexe,"* by Professor J. A. Barré (Strasbourg).

SOCIETY OF CHEMICAL INDUSTRY: FINE CHEMICALS GROUP.—At London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, London, W.C., March 6, 6.30 p.m., Joint meeting with London Section. *"Recent Developments in Fluorescent Materials,"* by Drs. S. T. Henderson and J. W. Strange.

Tuesday

INSTITUTE OF DERMATOLOGY, 5, Lisle Street, Leicester Square, London, W.C.—March 7, 5 p.m., *"Seborrhoeic Dermatitis,"* by Dr. F. R. Bettley.

INSTITUTE OF OPHTHALMOLOGY (UNIVERSITY OF LONDON), Judd Street, London, W.C.—March 7, 5.30 p.m., *"Some Recent Advances in Physiology of Vision (1),"* by Professor H. Hartridge.

INSTITUTE OF UROLOGY.—At St. Paul's Hospital, Endell Street, London, W.C., March 7, (1) 3.30 p.m., Ward Round by Mr. A. R. C. Higham; (2) 5 p.m., *"Marion's Disease and Vesical Diverticula,"* by Mr. A. W. Badenoch.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, London, W.C.—March 7, 5 p.m., *"Post-operative Venous Thrombosis and Embolism,"* Hunterian Lecture by Professor R. S. Murley.

Wednesday

CAMBRIDGE UNIVERSITY.—At Addenbrook's Hospital, Cambridge, March 8, 2.30 p.m., *"Age and Skill: An Experimental Approach,"* by Mr. A. T. Welford.

EDINBURGH CLINICAL CLUB.—At Physiotherapy Department, Edinburgh Royal Infirmary, March 8, 4 p.m., clinical meeting, by Miss M. I. V. Mann.

GLASGOW UNIVERSITY: DEPARTMENT OF OPHTHALMOLOGY.—March 8, 8 p.m., *"The Evolution of the Ophthalmoscope,"* by Dr. S. Galbraith.

INSTITUTE OF OPHTHALMOLOGY (UNIVERSITY OF LONDON), Judd Street, London, W.C.—March 8, 5.30 p.m., *"Some Recent Advances in Physiology of Vision (2),"* by Professor H. Hartridge.

INSTITUTE OF UROLOGY.—(1) At St. Peter's Hospital, Henrietta Street, Covent Garden, London, W.C., March 8, 3.30 p.m., *"Morbid Histiology,"* by Dr. C. Dukes; (2) At St. Paul's Hospital, Endell Street, London, W.C., March 8, 5 p.m., *"Injuries of and Foreign Bodies in the Bladder,"* by Mr. D. I. Williams.

LONDON UNIVERSITY, Senate House, Bloomsbury, W.C.—March 8, 5.15 p.m., *"Formen der Neueren Deutschen Erzählkunst,"* by Professor G. Müller (Bonn).

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, London, W.C.—March 8, 5 p.m., *"The Blood and Lymph Pathways in the Spermatic Cord,"* Hunterian Lecture by Professor Milroy Paul.

SOCIETY OF CHEMICAL INDUSTRY: FOOD GROUP.—At Medical Society of London, 11, Chandos Street, Cavendish Square, London, W., March 8, (1) 6 p.m., annual general meeting of Microbiological Panel; (2) 6.15 p.m., meeting of Microbiological Panel, *"The Impact of Genetics on Microbiology,"* by Dr. G. Pontecorvo.

SOUTH-WEST LONDON MEDICAL SOCIETY.—At Bolingbroke Hospital, Wandsworth Common, London, S.W., March 8, 8.30 p.m., *"The Prostate Gland in General Practice,"* by Mr. J. R. Crumbie.

Thursday

ADLERIAN SOCIETY OF GREAT BRITAIN: MEDICAL SECTION.—At 11, Chandos Street, London, W., March 9, 8 p.m., *"The Psychological Aspects of Marriage Guidance,"* by Dr. Ethel Dukes. Discussion to be opened by Drs. Winifred Doherty and Alan Maberly.

INSTITUTE OF DERMATOLOGY, 5, Lisle Street, Leicester Square, London, W.C.—March 9, 5 p.m., *"Drug Eruptions,"* by Dr. L. Forman.

INSTITUTE OF UROLOGY.—(1) At St. Peter's Hospital, Henrietta Street, Covent Garden, London, W.C., March 9, 3.30 p.m., *"Morbid Histiology,"* by Dr. C. Dukes; (2) At St. Paul's Hospital, Endell Street, London, W.C., March 9, 5 p.m., *"Aetiology, Pathology, and Symptoms of Benign Prostatic Enlargement,"* by Mr. A. C. Morson.

LONDON UNIVERSITY.—At Wye College, Wye, near Ashford, Kent, March 9, 8.15 p.m., *"Planes of Nutrition in Relation to Growth, Pregnancy, and Lactation,"* by Dr. D. P. Cuthbertson (Aberdeen).

MEDICAL SOCIETY OF LONDON.—At Claridges Hotel, Brook Street, London, W., March 9, annual dinner.

NATIONAL HOSPITAL, Queen Square, London, W.C.—March 9, 5 p.m., *"Operative Treatment of Hypertension,"* by Professor A. G. Weiss (Strasbourg).

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN, 17, Bloomsbury Square, London, W.C.—March 9, 7.30 p.m., *"Statistics and Biological Assay,"* by Dr. J. O. Irwin, D.Sc.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, London, W.C.—March 9, 5 p.m., *"Renal Denervation,"* Hunterian Lecture by Professor J. B. Oldham.

ROYAL SANITARY INSTITUTE.—At Corporation Hall, West Row, Stockton-on-Tees, March 9, 10 a.m., Sessional Meeting. *"Town Planning and Health,"* by Mr. Gilbert Cowan; *"Public Health Administration and the County Districts,"* by Dr. H. J. Peters.

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL, Hyde Park Corner, London, S.W.—March 9, 4.30 p.m., *"Psychiatry,"* lecture-demonstration by Dr. D. Curran.

TORQUAY AND DISTRICT MEDICAL SOCIETY.—At Torbay Hospital, March 9, 8.30 p.m., *"Some Recent Advances in Paediatrics,"* by Dr. Wilfred Sheldon.

UNIVERSITY COLLEGE, Gower Street, London, W.C.—March 9, 4.45 p.m., *"The Peptide Bond in Biochemistry,"* by Dr. T. S. G Jones.

UNIVERSITY COLLEGE, Gower Street, London, W.C.—March 9, 5.30 p.m., *"Problems of Directed Evolution,"* by Professor B Rensch (University of Münster).

Friday

MAIDA VALE HOSPITAL FOR NERVOUS DISEASES, Maida Vale, London, W.—At Medical School, March 10, 5 p.m., Neurological Demonstration by Dr. Helen Dimsdale.

ROYAL MEDICAL SOCIETY, 7, Melbourne Place, Edinburgh.—March 10, 8 p.m., Valedictory address by the senior president.

UNIVERSITY COLLEGE, Gower Street, London, W.C.—March 10, 5.30 p.m., *"Histological Changes Correlated with Changes of Body Size,"* by Professor B. Rensch (University of Münster).

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—At Miller Hospital, Greenwich High Road, London, S.E., March 10, 8.30 p.m., *"Legal Pitfalls in Medical Practice,"* by Dr. Robert Forbes.

Saturday

SOUTH-EAST METROPOLITAN REGIONAL TUBERCULOSIS SOCIETY.—At Guy's Hospital, London Bridge, S.E., March 11, *"Minimal Tuberculous Lesions and their Treatment,"* by Dr. E. R. Boland

APPOINTMENTS

Dr. John Cairney, formerly superintendent-in-chief of Wellington Hospital, New Zealand, has been appointed Director-General of Health in succession to Dr. T. R. Ritchie, who has retired.

PAINE, DOUGLAS H. D., M.B., B.S., D.P.M., Deputy Medical Superintendent (Consultant Psychiatrist), St. Margaret's Hospital, Great Barr, Birmingham.

ST. ANDREW'S HOSPITAL, Devons Road, London, E.—*Junior Registrar* (*Casualty Officer*), G. T. F. Braddock, M.B., B.Chir. *Junior Registrar* (*Anaesthetist*), Kathleen J. Logan, M.B., Ch.B.

SPENCER, M. C., B.M., B.Ch., House-Surgeon, Middlesex Hospital, London, W.

SWYER, ROBERT, M.R.C.S., L.R.C.P., D.P.H., Consultant in Infectious Diseases, St. Ann's General Hospital (formerly North-Eastern Hospital), St. Ann's Road, London, N.

THOMAS, G. OWEN, M.D., Consultant Chest Physician, Montgomery and Merionethshire.

TYLER, KENNETH, B.M., B.Ch., D.Phys.Med., Consultant Physician in Physical Medicine, Portsmouth Hospitals Group.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Arthur.—On February 18, 1950, at Fernwood House, Newcastle-upon-Tyne, to Rhoda (née Jeffrey), wife of Hugh R. Arthur, F.R.C.S., M.R.C.O.G., a brother for Rosemary.

Cox.—On February 22, 1950, at Nuffield House, Guy's Hospital, London, S.E., to Betty (nee Padbury), wife of Dr. A. G. C. Cox, a sister for Christopher and Charles—Katharine Mary.

Herbert-Burns.—On February 20, 1950, at Somerleigh Court, Dorchester, to Joan (née Jolly), wife of Jack Herbert-Burns, M.B., B.S., a sister for Hugh and Susan—Rosanne.

Hamerton.—On February 13, 1950, at the Kent and Canterbury Hospital, to Valerie (née Burgess, formerly Sheane), wife of Dr. J. R. Hamerton, of Herne Bay, Kent, a son—Philip.

Lush.—On February 21, 1950, at Bearsted Memorial Hospital, Hampton Court, to Margaret, wife of Dr. Brandon Lush, a son.

Ross.—On February 26, 1950, at Queen Mary's Hospital, Stratford, to Margaret, wife of Dr. Michael Ross, a brother for Martin.

Sapier.—On February 22, 1950, to Dr. and Mrs. N. V. Sapier, Woodland House, Longwood Huddersfield, a daughter—Linda Ruth.

White.—On February 2, 1950, at West Cornwall Hospital, Penzance, to Edna wife of Mr. J. R. A. White, M.B., F.R.C.S.Ed., a son.

MARRIAGES

Campbell—Kennedy.—On February 25, 1950, at St. Andrew's Garrison Church, Aldershot, Captain Ronald Wilson Campbell, R.A.M.C., younger son of Dr. and Mrs. J. Young Campbell, of 86, Copland Road, Glasgow, S.W., to Dr. Margaret Mary Kennedy, only daughter of Drs. D. A. D. and Agnes Kennedy of Cranbrook House, Fleet, Hants.

Hildrey—Lamb.—On February 11, 1950, at Gorleston-on-Sea, Norfolk, Gordon C. Hildrey, M.B., B.S., of Newcastle, to Olwen Elizabeth Lamb, S.R.N., of Gorleston.

MacDougall—McNair.—On February 25, 1950, at St. James's, Spanish Place, London, W. Iain MacDougall, M.D., M.R.C.P., to Rachel McNair.

Suggit—Beadnell.—On February 17, 1950, at Hitchin, Herts, Bertram Suggit, M.B., Ch.B., D.P.H., to L. Myfanwy M. Beadnell, M.R.C.S., L.R.C.P.

DEATHS

Bristow.—On February 21, 1950, at 24, Alyth Road, Bournemouth, William Moss Bristow, M.R.C.S., L.R.C.P.Ed.&L.M.

Dowling.—On February 17, 1950, at 2, Clarence Road South, Weston-super-Mare, Edward Alfred Griffiths, M.R.C.S., L.R.C.P., L.D.S., aged 85.

Fison.—On February 25, 1950, at 2, St. John Street, Salisbury, Edmund Tower Fison, O.B.E., M.D., F.R.C.S.Ed., aged 80.

Shore.—On February 9, 1950, at Rotorua, New Zealand, Lewis Rudall Shore, M.C., M.D., M.R.C.P., D.P.H., aged 60.

Stanger.—On February 8, 1950, Geoffrey Stanger, B.M., B.Ch., of Grenofan, Heathfield, Sussex.

Taunton.—On February 8, 1950, at Hanwell, London, W., Richard Eustace Maxwell Taunton, M.B., Ch.B.

Wagner.—On February 5, 1950, at his home in Plymouth, Richard Henry Wagner, M.D., aged 85.

Wiggin.—On February 17, 1950, at Kenwyn Lodge, Torquay, Hugh Peter Victor Wiggin, M.R.C.S., L.R.C.P., aged 79.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Angina Pectoris and Atheroma

Q.—*I understand that in the view of the medical officers of the Ministry of Pensions angina pectoris is caused by atheroma of the coronary vessels, and is therefore not attributable to or aggravated by war service. Is there any absolute proof that this is so, or is this opinion peculiar to the Ministry of Pensions?*

A.—There is, of course, no doubt that angina pectoris is commonly caused by occlusive atheroma of the coronary arteries, and that such a disease cannot be attributed to war service. However, whether ischaemic heart disease can be aggravated in one way or another by war service is a vexed question. There is good evidence that angina pectoris is a great deal more common among professional men, particularly physicians and surgeons, than it is among unskilled labourers, for example, farm hands—approximately ten times more common. The high incidence of angina in the former group is attributed indirectly to the mental stress associated with their work. It is possible, therefore, but by no means proved, that the mental stress associated with active service might aggravate latent coronary disease and so precipitate angina pectoris or coronary thrombosis. The Ministry of Pensions does not appear to have come to any final conclusion on the point, and may allow aggravation in certain instances. Such an attitude is reasonable, for it has never been shown that the incidence of angina in the Services in wartime is higher than the incidence among civilian men in the same age group.

Biliary Dyskinesia

Q.—*What are the aetiology, signs, symptoms, and treatment of biliary dyskinesia? What investigations are necessary to establish this diagnosis?*

A.—Several clinical types of biliary dyskinesia have been described. In the hypertonic variety there is usually pain in the right hypochondrium one to two hours after meals; nausea is common and vomiting may occur; attacks of colic are frequent, and slight jaundice has been noted. Hyperchlorhydria is a constant accompaniment, and the symptom-complex may be associated with duodenal ulcer. It has been suggested that hyperacidity increases gall-bladder activity, while the hypermotile duodenum leads to spasm of the sphincter of Oddi. The atonic variety of biliary dyskinesia occurs in women of middle age, often obese. A dull ache is experienced in the epigastrium shortly after food; colic and jaundice do not arise in the absence of complications such as infection or stone. Achlorhydria is the rule, and constipation is common. The disturbance has been attributed to loss of the stimulus to gall-bladder contraction normally provided by acid chyme entering the duodenum. A reflex, or neurogenic, variety of dyskinesia has been described which is said to depend largely on emotional factors.

Diagnosis depends on recognition of the clinical syndrome. It is confirmed by cholecystography showing a gall-bladder which contracts normally but which empties slowly; on occasion the hepatic ducts may be seen filled with contrast medium; in the atonic variety the gall-bladder shadow may appear unduly large. Biliary drainage may reveal a gall-bladder responding poorly to magnesium sulphate and olive oil; a crystalline sediment may be found, but evidence of infection is usually lacking. Pain is accentuated by small doses of morphine, which increase the spasm of the sphincter of Oddi, and is relieved by nitrites. The "post-cholecystectomy syndrome" is another example of biliary dyskinesia in which dilatation of the common bile duct appears to be associated with spasm of the sphincter of Oddi. In the hypertonic type a modified ulcer diet with sedatives, antacids, and belladonna will usually control symptoms. In the atonic a diet containing a liberal allowance of fats and cholesterol will stimulate emptying of the gall-bladder and may be supplemented with olive oil. Hydrochloric acid and antispasmodics should be given, constipation corrected, and the "atonic" habitus improved by attention to general hygiene. In both varieties duodenal intubation and biliary drainage may be of value.

Hydrosalpinx

Q.—*On what points should the diagnosis of hydrosalpinx be based, and what is the treatment? Is this condition a common sequel of a septic abortion, and can anything be done to prevent its arising?*

A.—The pathogenesis of hydrosalpinx is to some extent obscure, but the essential underlying lesion appears to be injury, resulting in closure, of the outer end of the tube. In the majority of cases this injury is the result of infection, which may be pyogenic, as after abortion or labour, but is more often gonococcal. This is accounted for by the different routes of infection and by variations in the vulnerability and in the response of different parts of the tubes to different organisms. In some cases the original infection is so mild as to pass unnoticed at the time. One of the striking features of the condition is that the inner end of the tube is nearly always patent, and for this reason hysterosalpingography offers the most reliable method of diagnosis. Hydrosalpinx may be associated with symptoms of chronic salpingitis, but often the only complaint is sterility. As a rule it is impossible to detect the soft and fluctuant tubal swelling on bimanual examination, and the transuterine injection of a radio-opaque medium is necessary to reveal it.

So far as is known at present, prevention lies in the avoidance of tubal infection or, if that is impossible, its early and adequate treatment. The established lesion tends to be bilateral, and its treatment depends on the patient's symptoms. If these are absent or mild, active measures are unnecessary. If, however, they are troublesome, surgery is usually indicated. This means either salpingectomy or salpingostomy, depending on the circumstances and on the patient's desire for future child-bearing. Unfortunately, the results of salpingostomy in this respect are generally disappointing.

Injection Treatment of Hernia

Q.—*What is the accepted view of the injection treatment of hernia? What is the technique usually applied? What solution is used, and what are the immediate and long-term results?*

A.—The injection treatment of hernia has never become a popular method of therapy in this country. In America it is widely used. If cases are carefully selected probably between 25% and 35% can be cured by this method. The technique consists of injecting a chemical irritant into the inguinal canal (but not necessarily, in fact preferably not, into the sac itself) deep to the external oblique aponeurosis, thereby setting up a fibrous reaction which will obliterate the canal. Many different solutions have been used, Mayer's solution (zinc sulphate, phenol, and glycerin), "galtanol" (with a tannic and gallic acid base), and "sylnasol" (sodium psylliate) being among those most frequently employed.

Some ten to twelve injections at intervals of four to seven days are usually required, and it is essential that during the whole period the hernia must be kept under truss pressure. Good abdominal musculature, a relative absence of subcutaneous fat, a small external ring, and a completely reducible hernia are important points in the selection of cases. Local reactions (pain and swelling) are not marked if the injections are carefully made. Some degree of aseptic inflammation is usual. Long-term results show that in well-selected cases recurrence rates are as low as 3–7%. Full information can be obtained from the *Injection Treatment of Hernia*, by Carl O. Rice, published by F. A. Davis in 1937.

Autophony

Q.—*What is the cause and what is the treatment of a condition in which the patient's own respiration is loudly audible immediately after a sudden "crack" in the ears? This ceases on stooping or on deep pressure below the tip of the mastoid; it is never present when recumbent, and there is discomfort in speaking due to the noise in the ears. It usually occurs in one ear, sometimes in both. The Eustachian tubes are patent, and inflation has no effect.*

A.—This condition, presumably one of autophony, is usually ascribed to abnormal patency of the Eustachian tube. This may be caused by some scarring behind the posterior lip of the tube opening, or may even be caused by a very hypertrophied highly placed tonsil. The diagnosis may be confirmed by noting changes in the tympanic light reflex during forced respiration. Treatment would consist in removing the apparent cause. If no local cause is found the occasional insufflation of a mixture of one part salicylic acid in four parts of boric acid should be tried.

Insulin for Psoriasis

Q.—*A severe case of psoriasis has shown remarkable improvement on small daily doses of insulin, after a variety of other treatments had failed. Is there any reference in the literature to the use of insulin in this disease? What is the rationale of this treatment?*

A.—There seems to be no major study on this subject, but individual cases treated successfully with insulin have been reported from time to time. The treatment is empirical, but may have been suggested by the successful treatment of psoriasis on dietetic lines. Such results cannot be obtained consistently. It was recognized that the incidence of psoriasis diminished on the Continent during and after the first world war, and following this the theory was advanced that psoriasis was due to a disturbance of lipoid metabolism. The suggestion has not received much confirmation either clinically or in the laboratory. Psoriasis is not a symptom of established derangement of this type, but any sudden disturbance of health in the psoriatic may determine a temporary change in the behaviour of the eruption.

Tapeworm in Children

Q.—*What is the correct dose of male fern or pelletierine for a child of 4 years suffering from tapeworm infestation? Is chloroform in capsules useful, and what is the dosage and method of administration?*

A.—The method recommended for the treatment with male fern of an adult suffering from tapeworm was described in the *Journal* of December 25, 1948 (p. 1129). A similar course of treatment should be followed in the case of a child aged 4, but the dose given should be 5 min. (0.3 ml.) of freshly prepared oleoresin of aspidium in soft gelatin capsules, one capsule every half-hour for three doses. Pelletierine appears to have no advantages over male fern, and its marked toxicity renders it unsuitable for the treatment of children. Chloroform by itself has only a slight anthelmintic power, and it is doubtful if its use as an adjuvant is of much value.

Holmes–Adie Syndrome

Q.—*What is the aetiology, diagnosis, and treatment of a Holmes–Adie syndrome?*

A.—The aetiology of the Holmes–Adie syndrome, or tonic pupils and absent tendon jerks, is unknown. It is not a fatal disorder, and its pathology has never been investigated. In its fully developed form it is characterized by pupillary abnormalities and diminution or loss of one or more up to all of the tendon reflexes. The pupillary abnormalities are usually unilateral, but may be bilateral. The affected pupil is generally moderately dilated, and in ordinary circumstances shows no reaction to light; the reaction on accommodation occurs much more slowly than normally, may lead to a greater contraction than that of a normal pupil, and is unduly prolonged. This is the tonic, or myotonic, pupil. Accommodation may similarly be tonic. The typical tonic pupil differs from the Argyll-Robertson pupil in that it is large rather than small, and, of course, the Argyll–Robertson pupil reacts normally on accommodation. Variants of the syndrome occur—for example, the pupil may react poorly to accommodation and all the tendon reflexes may be preserved. No treatment influences the disorder, but eserine drops may be used to constrict the pupil if its large size causes discomfort in a bright light.

Rh-negative Mother

Q.—*What advice should I give to a woman who is Rh-negative and has an Rh-positive husband? She has two normal children, aged 7 and 9, but two recent pregnancies have resulted in a stillbirth and a late miscarriage. What are the chances of future babies being normal? Rh-negative antibodies have been demonstrated in the mother's serum.*

A.—If the patient is not satisfied with the size of her family and badly wants more children, the blood of the husband and the two surviving children should be tested. The results will probably make it clear whether the husband is homozygous Rh-positive (DD) or heterozygous Rh-positive (Dd). If he is homozygous, all subsequent children will have the disease; if he is heterozygous, then subsequent children will each have a 50:50 chance of being affected, and it will not be possible to say with any certainty whether the child has been unlucky until it is born. Thus, all subsequent children will have to be born in hospitals or clinics where immediate treatment by transfusion is possible. The chance of an affected child in this family surviving, even with modern treatment, is not good—not better than 50:50. The reason for saying this is that a history of a previous stillbirth makes the prognosis for future affected children more grave than it otherwise would be. On the other hand, if the mother is inclined to be satisfied with her family of two and the husband is homozygous, it would probably be best to advise her against having any further children.

NOTES AND COMMENTS

Survival of the Flea.—Dr. J. R. BUSVINE writes from the London School of Hygiene and Tropical Medicine: Your correspondent, Mr. G. C. Adeney (February 18, p. 448) states that he encountered some fleas in a deserted house in Lemnos, which, however, did not bite him. Surely the simplest explanation is that they were not human fleas but some animal's parasites which do not bite man. In your original note ("Any Questions?" December 24, 1949, p. 1484) you began by saying that many species of flea have the habit of surviving long periods in the absence of the host. Probably Mr. Adeney disturbed a dormant infestation of some wild animal which had been living in the deserted house.

Xanthoma.—Mr. R. AFFLECK GREEVES (London, W.1) writes: With reference to the remarks made by your contributor ("Any Questions?" February 11, p. 385) on the treatment of xanthelasma palpebrarum, I wish to say that in my experience these unsightly patches can be effectively and painlessly removed by the vigorous application of 50% trichloracetic acid to the affected areas by means of a match stick, the resulting scars being visible only on close scrutiny. In the case of large exuberant patches parts of the yellow areas may be missed at the first application, but these can easily be dealt with by a second one. A subsequent transient oedema of the lids is not uncommon, and the patient should be warned to expect this.

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